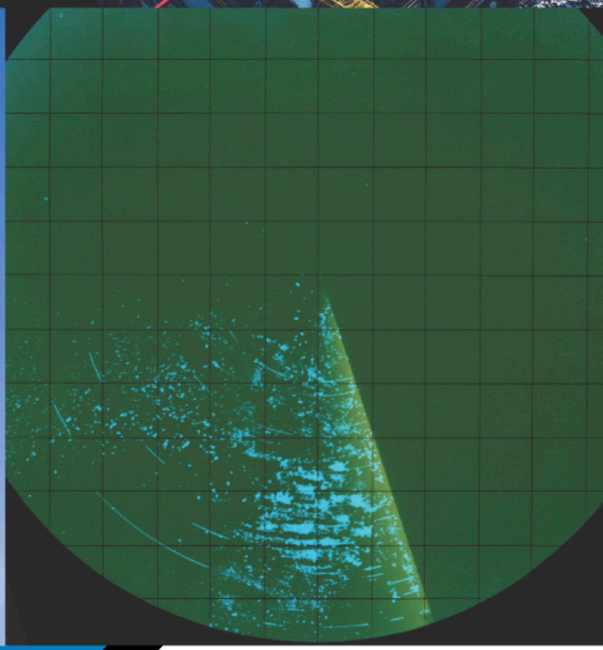










Wet Tantalum

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INDEX

IMPORTANT NOTICE

KEMET Electronics Corporation disclaims all warranties, whether express, implied, or statutory as to any manner whosoever, including the condition of the equipment, its compatibility with specific requirements, its merchantability, or fitness for any particular purpose which extend beyond the description on the face thereof.

Furthermore, under no circumstances shall KEMET Electronics Corporation be liable for consequential, special, incidental or indirect damages resulting from the use or handling of this product.

Finally, KEMET Electronics Corporation does not assume any responsibility for the correctness of the information contained in this catalog. All design characteristics, specifications, tolerances, and the like are subject to change without notice.

Introduction

KEMET wet tantalum capacitors are identified by the initial "T", followed by a "Series" number. T19X designates commercial product; T29X is military grade in accordance with Military Specification, MIL-PRF-39006. For detailed performance characteristics of the T29X series, please refer to the latest issue of the Military Specification. MIL-PRF-39006 establishes 1000 hour failure rate levels of 1%, 0.1%, and 0.01%. T29X series components are available in M, P, and R failure rates (1.0, 0.1, and 0.01, respectively).

Specific requirements are set forth in the respective Product Series in this catalog. All Military products are 100% electrically screened for the parameters shown in the respective product section. For non-military product, all series are 100% screened for leakage, capacitance and dissipation factor. All Series are inspected to electrical limits using a minimum .1% AQL sampling plans, according to the Military Standard MIL-STD-105, even after 100% testing. This sampling plan, to the best of KEMET Electronics' knowledge, meets or exceeds the generally accepted industry standard for similar products. KEMET capacitors may also be supplied, with prior agreement, to meet specifications with requirements differing from those of KEMET catalogs.

These Notes apply generally to all KEMET wet tantalum capacitors and illustrate typical performance under normal application conditions, except where noted. The intent of these Notes is to provide generalized information concerning performance characteristics.

1. General Application Class

Wet tantalum capacitors are usually applied in circuits where the AC component is small compared to the DC component. Typical uses known to KEMET Electronics include blocking, by-passing, decoupling, and filtering. They are also used in timing circuits. If two of these polar capacitors are connected "back-to-back" (i.e., negative-to-negative or positive-to-positive), the pair may be used in AC applications (as a non-polar device).

2. Storage Conditions

Capacitors may be stored without applied voltage over the operating temperature range specified in the catalogs for each Series. The range is from -55 to +125°C for all Series.

Storage at high temperature may cause a small, temporary increase in leakage current (measured under standard conditions), but the original value is usually restored within a few minutes after application of rated voltage.

DC leakage current may rise upon exposure to a combination of high temperature and high humidity, but is normally restored by voltage conditioning under standard conditions. The increase will be greater than that experienced under temperature influence alone because of conduction through absorbed water.

This Series may be affected by absorption of water on external insulating surfaces. The water film may also attract a layer of dust from the air increasing the effect. The most sensitive parameter is leakage current.

3. Polarity

These capacitors are inherently polar devices and may be permanently damaged or destroyed if connected with the wrong polarity. The positive terminal is identified on the capacitor body by a polarity mark and the capacitor body may include an obvious geometrical shape. See paragraph 11 for Reverse Voltage capabilities.

4. Operating Environment

Most of the discussion under "Storage Conditions" will apply also when capacitors are operated within the applicable electrical ratings described below. The temporary increase in leakage current (at standard conditions) following elevated-temperature exposure is not observed, however, if the capacitors are operated with adequate DC voltage applied.

5. Capacitance

Capacitance is measured at 120 Hz and 25°C with up to 1 volt rms applied. Measured circuits are of high impedance, however, and under these conditions 1 volt rms may be applied even to 6 volt capacitors (23% peak reversal) without a DC dias. DC bias is thus normally not used, except when rated voltage is below 6 volts and the AC signal level exceeds 0.3 vrms. However, MIL-PRF-39006 provides for up to 2.2 volts DC. DC bias is not commonly used at room temperature, but is more commonly used at elevated temperatures.

DC bias causes a small reduction in capacitance, up to about 2% when full rated voltage is applied as bias. DF is also reduced by the presence of DC.

Capacitance changes very little below 1 kHz but decreases more noticably at higher frequencies. Larger capacitance values decline more rapidly than small ratings.

Capacitance typically changes with temperature according to the curve of Figure 1.

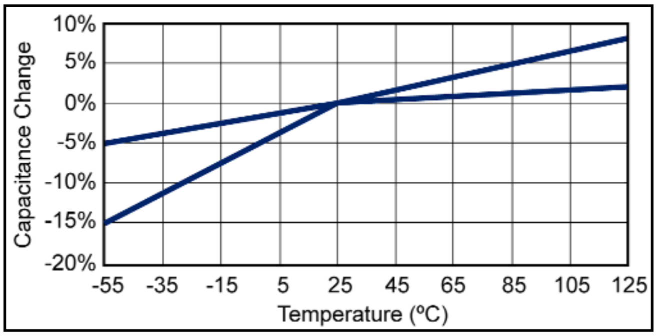


Figure 1. Typical Effect of Temperature upon Capacitance

6. Dissipation Factor (DF)

DF is measured at 120 Hz and 25°C with up to 1 volt rms applied. Note that, in either operation, peak AC plus DC bias must not exceed either rated voltage Measurement circuits are of high impedance, however, and under these conditions 1 volt rms may be applied even to 6 volt capacitors (23% peak reversal) without a DC bias. DC bias is thus normally not used, except when rated voltage is below 6 volts and the AC signal level exceeds 0.3 vrms. However, MIL-PRF-39006 provides for up to 2.2 volts DC. DC bias is not commonly used at room temperature, but is more commonly used at elevated temperatures.

Dissipation Factor (DF) is a useful low-frequency measure of the resistive component in capacitors. It is the ration of the unavoidable resistance to the capacitive reactance, usually expressed in percent. DF increases with temperature above +25°C and may also increase at lower temperatures. Unfortunately, one general limit for DF cannot be specified for all capacitance/voltage combinations, nor can response to temperature be simply stated. Catalogs for the respective series list DF limits under various conditions.

Dissipation factor increases with increasing frequency as would be expected from the decreasing capacitive reactance. DF is not a very useful parameter above about 1 kHz. The DF of larger capacitance values increases more rapidly than that of smaller ratings.

DC bias causes a small reduction in capacitance, up to about 2% when full rated voltage is applied, as bias, DF is also reduced by the presence of DC bias. Rated voltage may cause a decrease in DF of about 0.2% (e.g., a decrease from 3.6 to 3.4% DF).

DF is defined as $\frac{ESR}{X_C}$ and is also referred to occasionally, as tan d or "loss tangent." The Quality Factor", Q, is the reciprocal of DF (DF is not expressed in percent in this calculation). Another expression, rarely used is the "power factor," or $\frac{ESR}{Z}$. Power factor is *cos Ø*, while DF is *cot Ø*.

7. DC Leakage (DCL)

DC leakage is affected by voltage to a much larger extent, and this effect can frequently be used to advantage in circuits where only very low leakage currents can be tolerated.

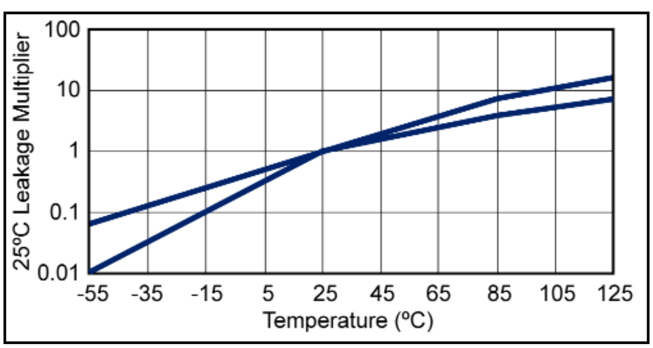


Figure 2. Typical Effect of Temperature upon DC Leakage Current

DC leakage current (DCL) increases with increasing temperature according to the typical curve of Figure 2.

Leakage current is measured at a rated voltage through +85°C and may also be measured at +125°C with 2/3 of rated voltage applied.

8. Rated Voltage

This term refers to the maximum continuous DC working voltage permissible at temperatures of +85°C or below. The lower operating temperature is specified as -55°C. Operation above +85°C is permissible, with reduced working voltage. The typical working voltage reduction is to 2/3 of rated voltage at +125°C.

9. Working Voltage

This is the maximum recommended peak DC operating voltage for continuous duty at or below 85°C without DC voltage surges or AC ripple superimposed. No voltage derating is required below 85°C. Capacitors may be operated to 125°C with working voltage linearly derated to 2/3 of the 85°C rating at 125°C.

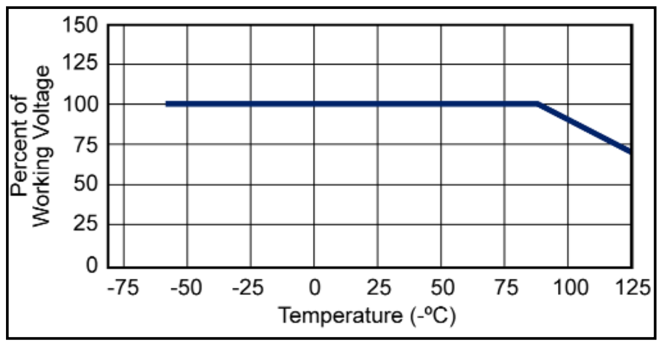


Figure 3. Working Voltage Change with Temperature

10. Surge Voltage

Surge Voltage is defined as the maximum voltage to which the capacitor should be subjected under transient conditions, including peak AC ripple and all DC transients.

Table 1. Surge Voltage Ratings

DC Working Voltage @ 85°C	6	8	10	15	25	30	50	60	75	100	125
Surge Voltage	6.9	9.2	11.5	17.2	28.8	34.5	57.5	69	86.2	115	144

A typical surge voltage test is performed at +85°C with the applicable surge voltage per Table 1. The surge voltage is applied for 1000 cycles of 30 seconds on voltage through a 1000 ± 100 ohm series resistor and 30 seconds off voltage with the capacitor discharged through a 1,000 ohm resistor. Upon completing the test, the capacitors are allowed to stabilize at room temperature. Capacitance, DF, and DCL are then tested:

1. The DCL should not exceed the initial 25°C limit.
2. The capacitance should be within ±2% of initial value.
3. The DF should not exceed the initial 25°C limit.

4. Capacitors show no visible mechanical damage or leakage of electrolyte.

11. Reverse Voltage

When subjected to a DC potential of 3 volts, applied in the reverse polarity direction for 125 hours ± 10 hours, capacitors shall meet the following requirements.

- DC Leakage: shall not exceed 1.25 times initial limit
- Capacitance: shall be within stated tolerance (K- ±10%, M- ±20%, J- ±5%)
- Dissipation Factor: shall not exceed initial limit

12. Equivalent Series Resistance (ESR)

Equivalent Series Resistance (ESR) is the preferred high-frequency statement of the resistance unavoidably appearing in these capacitors. ESR decreases with increasing frequency. Typical ESR limits are established in each specific product series. However, the ESR limits provided are for reference only, and are not necessarily the actual value that a particular Series product will attain.

Total impedance of the capacitor is the vector sum of capacitive reactance (X_c) and ESR, below resonance; above resonance total impedance is the vector sum of inductive reactance (X_L) and ESR. See Figure 4.

$$X_C = \frac{1ohm}{2\pi fC}$$

where:
f = frequency, Hertz
C = capacitance, Farad

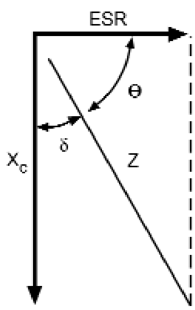


Figure 4a: Total Impedance of the Capacitor Below Resonance

$$X_L = 2\pi fL$$

where:
f = frequency, Hertz
C = capacitance, Farad

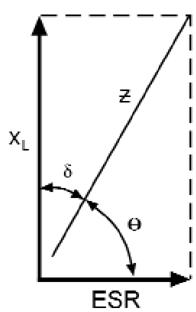


Figure 4b: Total Impedance of the Capacitor Above Resonance

To understand the many elements of a capacitor, see Figure 5.

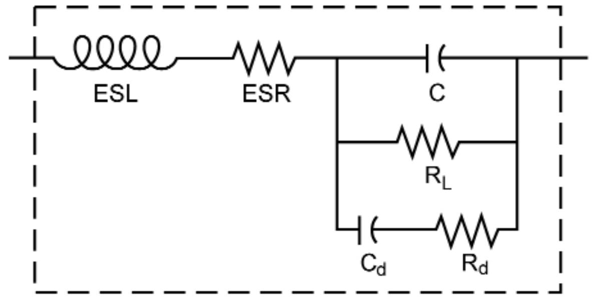


Figure 5. The Real Capacitor

A capacitor is a complex impedance consisting of many series and parallel elements, each adding to the complexity of the measurement system.

ESL – Represents lead wire and construction inductance. In most instances (especially in tantalum and monolithic ceramic capacitors) it is insignificant at the basic measurement frequencies of 120 and 1000 Hz.

ESR – Represents the actual ohmic series resistance in series with the capacitance. Lead wires and capacitor electrodes are contributing sources.

RL – Capacitor Leakage Resistance. Typically it can reach 50,000 megohms in a tantalum capacitor. It can exceed 10^{12} ohms in monolithic ceramics and in film capacitors.

Rd – The dielectric loss contributed by dielectric absorption and molecular polarization. It becomes very significant in high frequency measurements and applications. Its value varies with frequency.

Cd – The inherent dielectric absorption of the solid tantalum capacitor which typically equates to 1-2% of the applied voltage.

As frequency increases, X_c continues to decrease according to its equation above. There is unavoidable inductance as well as resistance in all capacitors, and at some point in frequency, the reactance ceases to be capacitive and becomes inductive. This frequency is called the self-resonant point. In wet tantalum capacitors, the resonance is damped by the ESR, and a smooth, rather than abrupt, transition from capacitive to inductive reactance ($XL = 2\pi fL$) follows.

Despite the fact that the reactance is nearly all inductive above the self-resonance, these capacitors find use as decoupling devices up to 10MHz.

ESR and Z are also affected by temperature. At 100 kHz, ESR decreases with increasing temperature. The amount of change is influenced by the size of the capacitance and is generally more pronounced on smaller ratings.

13. Power Dissipation

The power dissipation of this device is defined by the allowable ripple current rating as listed in the part number reference tables. These ratings reflect an internal temperature rise of +50°C at the +85°C ambient temperature with 40 kHz ripple life currents as specified in MIL-PRF-39006. These currents are established at these conditions, with the adjusted DC bias applied during the test.

The permissible AC currents applied to these devices at conditions other than those defined for the Ripple Life Test can be derived from the following table. This table is listed as Table II, in MIL-PRF-39006/22F.

The following rules apply to the ripple capability of these devices:

1. At +125°C, the rated voltage decreases to 2/3 of the +85°C rated.
2. The positive peak of the applied AC ripple voltage plus the DC bias cannot exceed the rated voltage of the device, and the DC bias minus the negative peak of the AC voltage cannot exceed the maximum allowable reverse voltage of the device.
3. The ripple current ratings within the part number tables represents a maximum allowable internal temperature rise of +50°C at 40 kHz, and at an ambient temperature of +85°C, and complying to rules 1 and 2.
4. The maximum allowable temperature rise decreases linearly, to a +10°C rise at +125°C.
5. The ESR decreases with increasing frequency, and the internal temperature rise is proportional the ESR of the device.
6. The "% of +85°C Rated Voltage" defines the DC bias level for the device.

14. Long-Term Stability

When stabilized for measurement at standard conditions, capacitance will typically change within +10% -20% during a 10,000 hour life test +85°C.

Dissipation factor data from 10,000 hour life tests at +85°C show that post limits (at standard conditions) are within 20% (max) of initial value at the conclusion of these tests.

Leakage current is more variable than capacitance or DF; in fact, leakage current typically exhibits a logarithmic dependence in several respects. MIL-PRF-39006 permits leakage current (measured at standard conditions) to rise by 25% at 85°C over 10,000 hour life tests.

15. Failure Mode

Capacitor failure may be induced by exceeding the rated conditions of forward DC voltage, reverse DC voltage, surge voltage, surge current, power dissipation, or temperature. As with any practical device, these capacitors also possess an inherent, although low, failure rate when operated within the rated condition.

One failure mode is by short-circuit. Minor parametric drifts (see Section 14 "Long Term Stability") are of no consequence in circuits suitable for wet tantalum capacitors. Catastrophic failure occurs as an avalanche in DC leakage current over a short (millisecond) time span. The failed capacitor, while called "short-circuited", may exhibit a DC resistance of 10 to 10^4 ohm.

If a failed capacitor is in an unprotected low-impedance circuit, continued flow of current through the capacitor may obviously produce severe overheating. The short-circuit failure may thereby be converted to an open-circuit failure. If the circuit does not open promptly, the over-heated capacitor may damage the circuit board or nearby components. Protection against such occurrence is obtained by current-limiting devices or fuses provided by the circuit design.

Fortunately, the inherent failure rate of KEMET wet tantalum capacitors is low, and this failure rate may be further improved by circuit design. Statistical failure rates are provided for wet tantalum capacitors.

16. Reliability Prediction

The failure rate is dependent upon three important application conditions; DC voltage, ambient temperature, and circuit impedance. Additional effects are attributable to the capacitance of the device and atmospheric and mechanical exposure of the assembled circuit. The 1000 multiplier at the end converts the failure rate to parts-per-billion piece-hours. A prediction of the failure rate can be made using these application conditions and the formulas and tables listed in MIL-HDBK-217F (Notice 2).

Permissible AC Currents

Frequency of applied ripple current		120 Hz				800 Hz				1kHz				10 kHz				40 kHz				100 kHz			
Ambient		Temp (°C)				Temp (°C)				Temp (°C)				Temp (°C)				Temp (°C)				Temp (°C)			
		=55°	85°	105°	125°	=55°	85°	105°	125°	=55°	85°	105°	125°	=55°	85°	105°	125°	=55°	85°	105°	125°	=55°	85°	105°	125°
% of +85°C Rated Voltage	100%	0.60	0.39	--	--	0.71	0.43	--	--	0.72	0.45	--	--	0.88	0.55	--	--	1.00	0.63	--	--	1.10	0.69	--	--
	90%	0.60	0.46	--	--	0.71	0.55	--	--	0.72	0.55	--	--	0.88	0.67	--	--	1.00	0.77	--	--	1.10	0.85	--	--
	80%	0.60	0.52	0.35	--	0.71	0.62	0.42	--	0.72	0.62	0.42	--	0.88	0.76	0.52	--	1.00	0.87	0.59	--	1.10	0.96	0.65	--
	70%	0.60	0.58	0.44	--	0.71	0.69	0.52	--	0.72	0.70	0.52	--	0.88	0.85	0.64	--	1.00	0.97	0.73	--	1.10	1.07	0.80	--
	+66.67%	0.60	0.60	0.46	0.27	0.71	0.71	0.55	0.32	0.72	0.72	0.55	0.32	0.88	0.88	0.68	0.40	1.00	1.00	0.77	0.32	1.10	1.10	0.85	0.50

Base Multiplier: The first multiplier is the base multiplier (2) established for the capacitor type. For “CLR” “Tantalum Non-solid electrolyte” the base multiplier is 0.00040.
Temperature: The temperature factor is given as (3). From this formula, it can be seen that the unity factor, or 1, is derived at an ambient temperature of +25°C (+298°K), and that at temperatures below this the multiplier is decreasing and at temperatures above this the multiplier is increasing.
Voltage: The multiplier for application voltage (4) is a two step process: first, the application voltage is compared to 60% of rated voltage, and then this ratio is raised to an exponential power of 17 and added to unity. Consider applications of 50%, 60%, 70%, 80% and 90% of rated voltage. The multipliers for these applications would be 1.045, 2.00, 14.7, 134, and 986, respectively. From these results it is evident why manufacturers recommend application voltages not to exceed 50% rated voltages.
Capacitance: There is a factor (5) applied to the capacitance (in µF) which effectively increases the failure rate for increasing capacitance (increases in effective area resulting in increases in possible faults).
Environmental: The environmental factor is determined by the harshness of the ambient conditions beyond temperature. An explanation of these ratings is included in the MIL specification and are too extensive to be covered here. In most cases, this factor is set to ground benign or G_B, with the resulting factor equal to “1”.

CLR Style – Notice 2

(1.) $$\lambda_p = \lambda_b \pi_T \pi_V \pi_C \pi_Q \pi_E \times 1000$$

(2.) $$\lambda_b = .00040$$

(3.) $$\pi_T = \exp\left[\frac{-0.15}{8.617 \bullet 10^{-5}}\left(\frac{1}{T_{Amb}} - \frac{1}{298}\right)\right]$$

(4.) $$S = \frac{Application\,Voltage}{Rated\,Voltage} \qquad \pi_V = \left(\frac{S}{0.6}\right)^{17} + 1$$

(5.) $$\pi_C = C^{0.23}$$

(6.) $$\pi_E = Lookup\,Table$$

(7.) $$\pi_Q = \sqrt{\left(\frac{Pcs.\,Fail}{Pcs.\,Tested \times Hrs.\,Tested} \times 100{,}000\right)}$$

Environment	π_E
G_B	1.0
G_F	10
G_M	20
N_S	7.0
N_U	15
A_{IC}	12
A_{IF}	15
A_{UC}	25
A_{UF}	30
A_{RW}	40
S_F	0.50
M_F	20
M_L	50
C_L	570

Figure 6. MIL-HDBK-217F Notice 2 formulas.

Quality Factor: All of these multipliers are applied to the established or base failure rate of the part. The CLR Series is qualified under U.S. military specification MIL-PRF-39006. Failure rates as low as 0.001% kHr are available under this test program.

For series not covered by military specifications, an internal sampling program is operated by KEMET Quality Assurance whereby parts are put on life test at rated voltage for 2000 hours. The confidence level chosen for the reporting data is 60%.)The cost of sampling each batch would be prohibitive, and no claim is made to quarantee the failure rate of each batch.) With this testing and each new qualification test for new parts, the average failure rate for all commercial Series lies between 0.1% and 1.0% per thousand-piece-hours.

Fit Calculator

All of these factors are gathered into a Windows based software, available free from the KEMET web site (www.kemet.com). The “FIT Calculator” software does all the calculations and look-ups based on information entered or selected by the operator. A manual may also be downloaded from the same web page to explain the controls and displays. The Manual as well as a help screen also detail the environmental conditions.

17. Environmental Consideration

It is not possible to foresee all the conditions to which capacitors may be subjected. Following is a list of standard tests which each Series will survive. Data may be available (upon request) under more severe stresses for certain Series.

- **Life Test 85°C or 125°C, 2000 Hours;** when subjected to 2000 hours at 85°C at full rated DC voltage, or 125°C at 2/3 of 85°C voltage, the capacitor shall meet the following requirements when tested at 25°C.
  - The DCL shall be within 1.25 times the initial DCL limit.
  - Capacitance shall be within limits specified in MIL-PRF-39006.

- **Low Temperature (Storage) per MIL-PRF-39006.**
  Post test of capacitor shall meet the following requirements when tested at 25°C:
  - The DCL shall be within the initial DCL limit.
  - Capacitance shall be within limits in MIL-PRF-39006.
  - The DF shall not exceed the initial limit.

- **Lead Strength MIL-STD-202 Method 211:** Pull test will be performed as in MIL-STD-202, Method 211. The following details and exceptions shall apply.
  a. Test condition letter - A
  b. The body of the capacitor will be securely clamped during test.
  c. Applied force - 3 pounds (1.4 kg)
  d. Duration of applied force: 30 seconds

- **Vibration; High Frequency: Per MIL-STD-202, Method 204, Condition D, 10 Hz to 2000 Hz.**
  a. Mounting - Capacitors shall be mounted on a fixture by the body. Leads shall be supported by rigidly supported terminals
  b. Electrical load conditions - During the test, the specified DC rated voltage shall be applied to the capacitors.

c. Test condition letter - H (80G).
d. Duration and direction of motion - 4 hours in each of two mutually perpendicular directions (total of 8 hours), one parallel and the other perpendicular to the axis.
e. Measurements during vibration - During the last cycle, an electrical measurement shall be made to determine intermittent operation or open- or short-circuiting. Observations shall also be made to determine intermittent contact or arcing or open- or short-circuiting.
   Detecting equipment shall be sufficiently sensitive to detect any interruption with a duration of 0.5 ms, or greater.
   - DC Leakage - shall not exceed 1.25 times initial limit
   - Capacitance - shall not change more than ± 5% from initial limit
   - DF - shall not exceed 1.15 times initial limit
f. Examination after test - Capacitors shall be visually examined for evidence of mechanical damage.

- **Shock Test: Per MIL-STD-202, Method 213.** The following details shall apply:
  a. Special mounting means - Capacitors shall be rigidly mounted on a mounting fixture by the body. When securing leads, care shall be taken to avoid pinching the heads.
  b. Test-condition letter - D (500 G peak). 6 ms. (sawtooth)
  c. Measurements and electrical loading during shock - During the test, observations shall be made to determine intermittent contact or arcing or open- or short-circuiting. Detecting equipment shall be sufficiently sensitive to detect any interruption with a duration of 0.5 ms. The DC rated voltage shall be applied to the capacitors during the test.
  d. Examinations after test - Capacitors shall be visually examined for evidence of arcing, breakdown, and mechanical damage.

- **Thermal Shock - MIL-STD-202, Method 107:** Capacitors shall be subjected to thermal shock in accordance with MIL-STD-202, Method 107, Test Condition A except step 3 shall be +125°C. Measurements before and after cycling are required. Conditioning prior to the first cycle will be 15 minutes at the following standard inspection conditions:
  a. Number of Cycles: 300 for qualification and Group C
  b. Ambient Temperature – 25°C ±5°C
  c. Final measurements are made after stabilization at room temperature

- **Moisture Resistance - MIL-STD-202, Method 106:** Capacitors shall be tested in accordance with MIL-STD-202, Method 106 including the following details:
  a. Mounting - The capacitors shall be mounted by normal mounting means
  b. Initial Measurements
  c. Polarizing and Load Voltage - 6 vdc
  d. Final measurements - After the final cycle and within 2 to 6 hours after removal of the capacitors from the humidity chamber, capacitance, dissipation factor, and DC leakage will be measured per MIL-PRF-39006.

- **Resistance to Solvents - MIL-STD-202, Method 215:**
  a. Brushing required after test
  b. DCL meets limit shown in respective Part Number Tables
  c. Capacitance meets applicable tolerance
  d. DF meets limits shown in respective Part Number Tables
  e. No visible damage to case or marking

- **Resistance to Soldering Heat - MIL-STD-202, Method 210, Test Condition, Letter C.** Leads shall be immersed to within 0.05 inch of the capacitor body. Capacitance, DF, and DCL should meet original limits shown in respective Part Number Tables.

- **Solderability - MIL-STD, Method 208:**
  a. Number of terminations on each capacitor tested: 2
  b. Depth of insertion in flux and solder to within 0.062” of welded joint

- **Stability at Low and High Temperature -55°C to 125°C:** Capacitors will be capable of withstanding extreme temperature testing at a succession of continuous steps at +25°C, -55°C, +25°C, +85°C, +125°C, +25°C, in the order stated. Capacitors shall be brought to thermal stability at each test temperature. Capacitance, DF, and DCL are measured at each test temperature except that DCL is not measured at -55°C, DC bias of 2.0 ±0.5 vdc is recommended for the capacitance and DF measurements.
  When measurements are made at the various steps, the electrical limits for each temperature shall not exceed the following limits.

Step 1, +25°C	DCL as indicated in original limit; capacitance within tolerance specified; DF as indicated in original limit shown in Part Number Tables.
Step 2, -55°C	Impedance and capacitance change as defined in M39006 Slash Sheet.

Step 3, +25°C DCL as indicated in original limit; capacitance within ±5% of initial value; ESR, DF within limit ±5% of inital value; ESR, DF within limit shown in Part Number Tables.

Step 4, +85°C DCL shall not exceed 10 times original DCL limit at 25°C. Capacitance shall be within ±10% of the initial value. DF shall be within 125% of limits shown in Part Number Tables. ESR shall be within limits shown in Part Number Tables.

Step 5, +125°C DCL shall not exceed 12.5 times the original limit at 25°C. Capacitance shall be within ±12% of initial value. DF shall be within 150% of limits shown in Part Number Tables. ESR shall be within limits shown in Part Number Tables.

Step 6, +25°C DCL as indicated in original limit; capacitance within ±5% of initial value; ESR, DF as indicated in original limit shown in Part Number Tables.

Note: MIL-PRF-39006 specifies Δ's and limits by individual slash sheet.

- **AC Ripple Life at 85°C: Per MIL-STD-202, Method 108:**
  The following details shall apply:
  a. Distance of temperature measurements from specimens : Not applicable
  b. Method of mounting: Normal means
  c. Test condition letter: F (2000 hours, +72 hrs, -Ohm)
  d. DC Leakage, DF shall not exceed initial limit

- **Seal Condition: Per MIL-STD-202, Method 112**
  Conditions A or D, and C

18. High Temperature Capacitors - T197 and T198 Series

The voltage derating for these capacitors begins at +85°C, as with all other tantalum capacitors. There will be a linear derating between 100% at +85°C and 2/3 (67%) at +125°C. For the 200°C rated parts, the voltage rating shall be 50%.

For reverse voltage rating, the 3 VDC shall apply to all temperatures up to +85°C. From +85°C to +125°C, the reverse voltage rating shall be 2 VDC. From +125°C to +200°C, the reverse voltage rating shall be 1.0 VDC.

19. Mounting

Wet tantalum capacitors will pass the Resistance to Soldering Heat Test of MIL-STD-202, Method 210, Condition C. This test simulates wave solder of topside board mount product. This demonstration of resistance to solder heat is in accordance with what is believed to be the industry standard. More severe treatment must be considered reflective of an improper soldering process.

Shown in Figure 7 is a recommended solder wave profile for wet tantalum capacitors

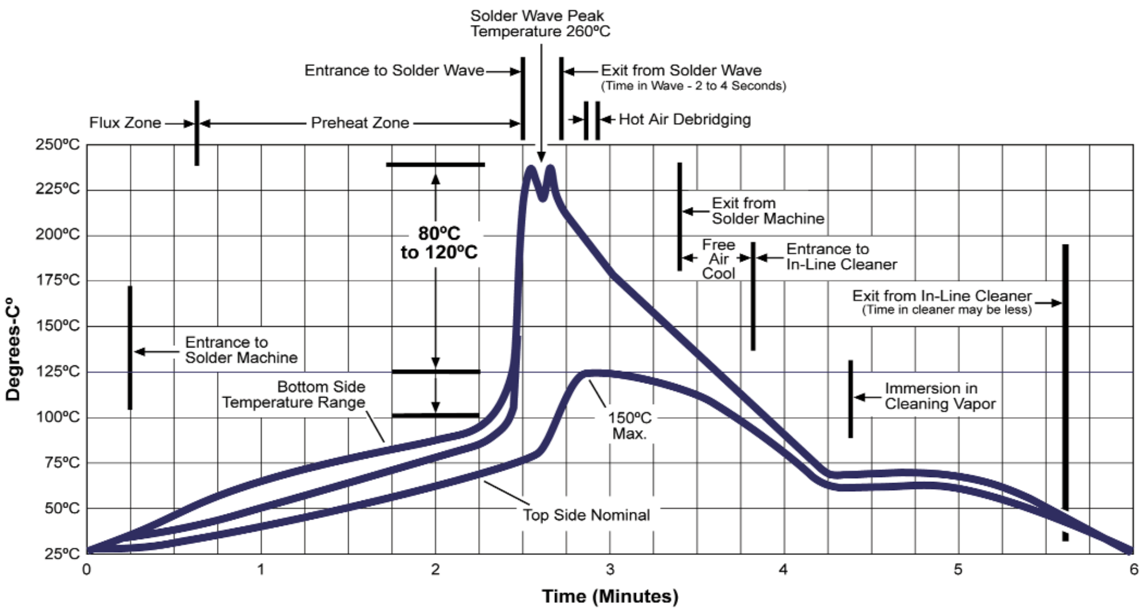


Figure 7. Optimum Solder Wave Profile

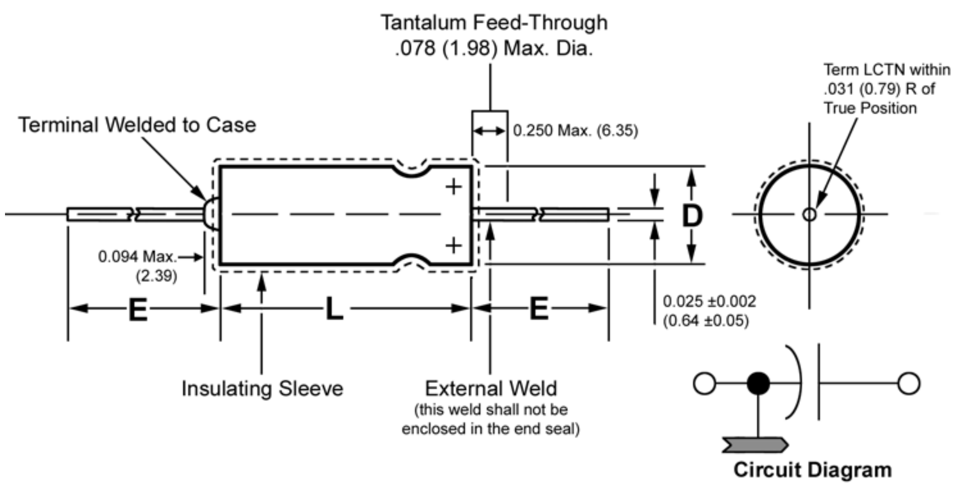
Applications

- Filtering, Bypass Circuits
- Coupling and Timing Circuits
- Low Source Impedance Circuits
- High Charging Current Circuits

Features

- Operating Temperature -55°C – +125°C
- Operating Temperature -55°C – +200°C, derated voltage, T197/T198 Series Only
- 6 – 125 Volts
- Capacitance Range – 1.7μF - 2200.0 μF
- High Shock, High Vibration Qualified
- Qualified to Mil-C-39006/22/25/30/31 Style CLR79, CLR81, CLR90, CLR91
- Capacitance Tolerance - ±5%, ±10%, ±20%
- Low ESR
- Tantalum Case

Outline Drawing



Dimensions - Inches (Millimeters)

KEMET Case Size	MIL-PRF-39006/22/25/30/31 Case Size	Uninsulated Case L* +0.031(0.79) -0.016(0.41)	Uninsulated Case D ±0.016(0.41)	Insulated Case D Max.	E ±0.25(6.35)
A	T1	0.453(11.51)	0.188(4.78)	0.219(5.56)	1.50(38.10)
B	T2	0.641(16.28)	0.281(7.14)	0.312(7.92)	2.25(57.15)
C	T3	0.766(19.46)	0.375(9.52)	0.406(10.31)	2.25(57.15)
D	T4	1.062(26.97)	0.375(9.52)	0.406(10.31)	2.25(57.15)

* Length of base case sleeving shall be specified in MIL-PRF-39006.

Ordering Information

T 192 A 256 M 008 A S C

- **T** — **TANTALUM**
- **192** — **SERIES**
  - T190/T290 MIL-PRF-39006/30 (CLR90)
  - T191/T291 MIL-PRF-39006/31 (CLR91)
  - T192/T292 MIL-PRF-39006/22 (CLR79)
  - T195/T295 MIL-PRF-39006/25 (CLR81)
  - T197 & T198 High Temperature
- **A** — **CASE SIZE**
  A,B,C,D
- **256** — **CAPACITANCE PICOFARAD CODE**
  First two digits represent significant figures.
  Third digit specifies number of zeros.
- **M** — **CAPACITANCE TOLERANCE**
  M = ±20%, K = ±10%
- **008** — **VOLTAGE**
  As Shown
- **A** — **FAILURE RATE**
  A = Not Applicable
- **S** — **LEAD MATERIAL**
  S - Standard Solder Coated Nickel (Sn/Pb content)
- **C** — **SPECIFICATION**
  (when necessary)
  C-0100 (Uninsulated Components)
  C-0200 (High Shock, High Vibration)

*Refer to www.kemet.com for lead material transition to Pb free.

T19X Commercial Component Marking

Marking	Description
K T192 +	Manufacturer's Identification, Series, Polarity
6R8 µF	Nominal Capacitance in Microfarads (µF) ("R" Indicates a Decimal)
10% 75V+	Capacitance Tolerance, Voltage Polarity
0602AA	Date*/Lot Code

* 1st & 2nd digit = Year; 3rd & 4th digit = Week

Mil-PRF-39006 Component Marking

Marking	Description
M39006/ +	Military Specification, Polarity
22-0061	Specification Sheet Number
JAN K +	JAN Marking, Trademark, Polarity
31433	CAGE Code
0605AA +	Date*/Lot Code, Polarity
15µF 15V	Capacitance, Voltage

* 1st & 2nd digit = Year 3rd & 4th digit = Week

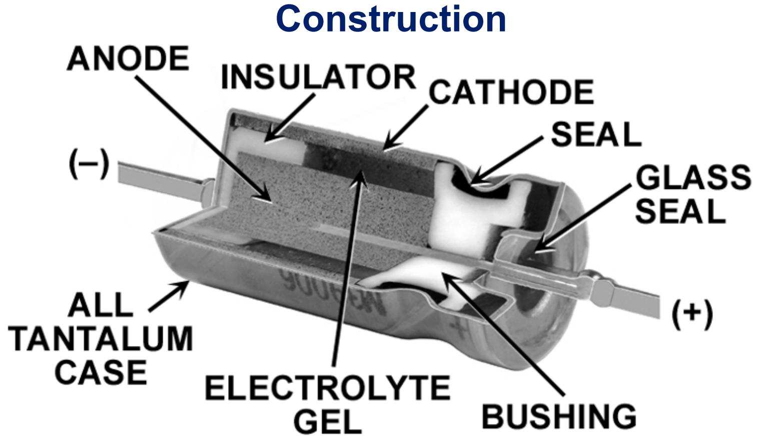
Packaging

Case Size		
KEMET	EIA	Pieces per Tray
A	T1	20
B	T2	20
C	T3	20
D	T4	20

Component Weight

Case Size		
KEMET	EIA	Average Weight (grams)
A	T1	2.0
B	T2	5.1
C	T3	8.1
D	T4	14.3

Construction



T190/T290 (CLR90) Ratings & Part Number Reference

Cap µF	Case Size	Cap Tol.	KEMET Part Number	Max. D.C. Leakage µA +25°C	Max. D.F. @ 25°C 120 Hz	Max. ESR Ohms at +25°C 120 Hz	Max. Ripple Current mArms at 85°C 40 kHz	MIL-PRF-39006/30A (CLR90) Capacitors Dash Number Reference (#) Failure Rate (%/1000 Hrs)			KEMET Military Equivalent
								M(1.0)	P(0.1)	R(0.01)	
6 Volt Rating at +85°C (4 Volt Rating at +125°C)											
30.0	A	20	T190A306M006AS	1.0	4.50	1.99	820	0001	0221	0441	T290A306M006(1)S
30.0	A	10	T190A306K006AS	1.0	4.50	1.99	820	0002	0222	0442	T290A306K006(1)S
30.0	A	5	T190A306J006AS	1.0	4.50	1.99	820	0003	0223	0443	T290A306J006(1)S
68.0	A	20	T190A686M006AS	1.0	7.50	1.58	960	0004	0224	0444	T290A686M006(1)S
68.0	A	10	T190A686K006AS	1.0	7.50	1.58	960	0005	0225	0445	T290A686K006(1)S
68.0	A	5	T190A686J006AS	1.0	7.50	1.58	960	0006	0226	0446	T290A686J006(1)S
140.0	B	20	T190B147M006AS	1.0	10.50	0.99	1200	0007	0227	0447	T290B147M006(1)S
140.0	B	10	T190B147K006AS	1.0	10.50	0.99	1200	0008	0228	0448	T290B147K006(1)S
140.0	B	5	T190B147J006AS	1.0	10.50	0.99	1200	0009	0229	0449	T290B147J006(1)S
270.0	B	20	T190B277M006AS	1.0	22.50	1.11	1375	0010	0230	0450	T290B277M006(1)S
270.0	B	10	T190B277K006AS	1.0	22.50	1.11	1375	0011	0231	0451	T290B277K006(1)S
270.0	B	5	T190B277J006AS	1.0	22.50	1.11	1375	0012	0232	0452	T290B277J006(1)S
330.0	C	20	T190C337M006AS	2.0	18.00	0.73	1800	0013	0233	0453	T290C337M006(1)S
330.0	C	10	T190C337K006AS	2.0	18.00	0.73	1800	0014	0234	0454	T290C337K006(1)S
330.0	C	5	T190C337J006AS	2.0	18.00	0.73	1800	0015	0235	0455	T290C337J006(1)S
560.0	C	20	T190C567M006AS	2.0	27.50	0.65	1900	0016	0236	0456	T290C567M006(1)S
560.0	C	10	T190C567K006AS	2.0	27.50	0.65	1900	0017	0237	0457	T290C567K006(1)S
560.0	C	5	T190C567J006AS	2.0	27.50	0.65	1900	0018	0238	0458	T290C567J006(1)S
1200.0	D	20	T190D128M006AS	3.0	45.00	0.50	2265	0019	0239	0459	T290D128M006(1)S
1200.0	D	10	T190D128K006AS	3.0	45.00	0.50	2265	0020	0240	0460	T290D128K006(1)S
8 Volt Rating at +85°C (5 Volt Rating at +125°C)											
25.0	A	20	T190A256M008AS	1.0	3.75	1.99	820	0021	0241	0461	T290A256M008(1)S
25.0	A	10	T190A256K008AS	1.0	3.75	1.99	820	0022	0242	0462	T290A256K008(1)S
25.0	A	5	T190A256J008AS	1.0	3.75	1.99	820	0023	0243	0463	T290A256J008(1)S
56.0	A	20	T190A566M008AS	1.0	7.00	1.66	900	0024	0244	0464	T290A566M008(1)S
56.0	A	10	T190A566K008AS	1.0	7.00	1.66	900	0025	0245	0465	T290A566K008(1)S
56.0	A	5	T190A566J008AS	1.0	7.00	1.66	900	0026	0246	0466	T290A566J008(1)S
120.0	B	20	T190B127M008AS	1.0	10.00	1.11	1220	0027	0247	0467	T290B127M008(1)S
120.0	B	10	T190B127K008AS	1.0	10.00	1.11	1220	0028	0248	0468	T290B127K008(1)S
120.0	B	5	T190B127J008AS	1.0	10.00	1.11	1220	0029	0249	0469	T290B127J008(1)S
220.0	B	20	T190B227M008AS	1.0	18.50	1.12	1370	0030	0250	0470	T290B227M008(1)S
220.0	B	10	T190B227K008AS	1.0	18.50	1.12	1370	0031	0251	0471	T290B227K008(1)S
220.0	B	5	T190B227J008AS	1.0	18.50	1.12	1370	0032	0252	0472	T290B227J008(1)S
290.0	C	20	T190C297M008AS	2.0	17.00	0.78	1770	0033	0253	0473	T290C297M008(1)S
290.0	C	10	T190C297K008AS	2.0	17.00	0.78	1770	0034	0254	0474	T290C297K008(1)S
290.0	C	5	T190C297J008AS	2.0	17.00	0.78	1770	0035	0255	0475	T290C297J008(1)S
430.0	C	20	T190C437M008AS	2.0	23.00	0.71	1825	0036	0256	0476	T290C437M008(1)S
430.0	C	10	T190C437K008AS	2.0	23.00	0.71	1825	0037	0257	0477	T290C437K008(1)S
430.0	C	5	T190C437J008AS	2.0	23.00	0.71	1825	0038	0258	0478	T290C437J008(1)S
850.0	D	20	T190D857M008AS	4.0	30.00	0.47	2330	0039	0259	0479	T290D857M008(1)S
850.0	D	10	T190D857K008AS	4.0	30.00	0.47	2330	0040	0260	0480	T290D857K008(1)S
10 Volt Rating at +85°C (7 Volt Rating at +125°C)											
20.0	A	20	T190A206M010AS	1.0	3.00	1.99	820	0041	0261	0481	T290A206M010(1)S
20.0	A	10	T190A206K010AS	1.0	3.00	1.99	820	0042	0262	0482	T290A206K010(1)S
20.0	A	5	T190A206J010AS	1.0	3.00	1.99	820	0043	0263	0483	T290A206J010(1)S
47.0	A	20	T190A476M010AS	1.0	6.50	1.84	855	0044	0264	0484	T290A476M010(1)S
47.0	A	10	T190A476K010AS	1.0	6.50	1.84	855	0045	0265	0485	T290A476K010(1)S
47.0	A	5	T190A476J010AS	1.0	6.50	1.84	855	0046	0266	0486	T290A476J010(1)S
100.0	B	20	T190B107M010AS	1.0	7.50	0.99	1200	0047	0267	0487	T290B107M010(1)S
100.0	B	10	T190B107K010AS	1.0	7.50	0.99	1200	0048	0268	0488	T290B107K010(1)S
100.0	B	5	T190B107J010AS	1.0	7.50	0.99	1200	0049	0269	0489	T290B107J010(1)S
180.0	B	20	T190B187M010AS	1.0	15.00	1.11	1365	0050	0270	0490	T290B187M010(1)S
180.0	B	10	T190B187K010AS	1.0	15.00	1.11	1365	0051	0271	0491	T290B187K010(1)S
180.0	B	5	T190B187J010AS	1.0	15.00	1.11	1365	0052	0272	0492	T290B187J010(1)S
250.0	C	20	T190C257M010AS	2.0	15.00	0.80	1720	0053	0273	0493	T290C257M010(1)S
250.0	C	10	T190C257K010AS	2.0	15.00	0.80	1720	0054	0274	0494	T290C257K010(1)S
250.0	C	5	T190C257J010AS	2.0	15.00	0.80	1720	0055	0275	0495	T290C257J010(1)S
390.0	C	20	T190C397M010AS	2.0	22.00	0.75	1800	0056	0276	0496	T290C397M010(1)S
390.0	C	10	T190C397K010AS	2.0	22.00	0.75	1800	0057	0277	0497	T290C397K010(1)S
390.0	C	5	T190C397J010AS	2.0	22.00	0.75	1800	0058	0278	0498	T290C397J010(1)S
750.0	D	20	T190D757M010AS	4.0	25.00	0.44	2360	0059	0279	0499	T290D757M010(1)S
750.0	D	10	T190D757K010AS	4.0	25.00	0.44	2360	0060	0280	0500	T290D757K010(1)S

(1) To complete the KEMET part number, insert Failure Rate Level: M = (1.0); P = (0.1); and R = (.01)
(#) Dash number shall include letter "H" to indicate high vibration and shock requirements (i.e. 80g vibration and 500g shock)

T190/T290 (CLR90) Ratings & Part Number Reference

Cap µF	Case Size	Cap Tol.	KEMET Part Number	Max. D.C. Leakage µA +25°C	Max. D.F. @ 25°C 120 Hz	Max. ESR Ohms at +25°C 120 Hz	Max. Ripple Current mArms at 85°C 40 kHz	MIL-PRF-39006/30A (CLR90) Capacitors Dash Number Reference (#) Failure Rate (%/1000 Hrs)			KEMET Military Equivalent
								M(1.0)	P(0.1)	R(0.01)	
15 Volt Rating at +85°C (10 Volt Rating at +125°C)											
15.0	A	20	T190A156M015AS	1.0	2.50	2.21	780	0061	0281	0501	T290A156M015(1)S
15.0	A	10	T190A156K015AS	1.0	2.50	2.21	780	0062	0282	0502	T290A156K015(1)S
15.0	A	5	T190A156J015AS	1.0	2.50	2.21	780	0063	0283	0503	T290A156J015(1)S
33.0	A	20	T190A336M015AS	1.0	5.00	2.01	820	0064	0284	0504	T290A336M015(1)S
33.0	A	10	T190A336K015AS	1.0	5.00	2.01	820	0065	0285	0505	T290A336K015(1)S
33.0	A	5	T190A336J015AS	1.0	5.00	2.01	820	0066	0286	0506	T290A336J015(1)S
70.0	B	20	T190B706M015AS	1.0	6.50	1.23	1150	0067	0287	0507	T290B706M015(1)S
70.0	B	10	T190B706K015AS	1.0	6.50	1.23	1150	0068	0288	0508	T290B706K015(1)S
70.0	B	5	T190B706J015AS	1.0	6.50	1.23	1150	0069	0289	0509	T290B706J015(1)S
120.0	B	20	T190B127M015AS	1.0	9.00	0.99	1450	0070	0290	0510	T290B127M015(1)S
120.0	B	10	T190B127K015AS	1.0	9.00	0.99	1450	0071	0291	0511	T290B127K015(1)S
120.0	B	5	T190B127J015AS	1.0	9.00	0.99	1450	0072	0292	0512	T290B127J015(1)S
170.0	C	20	T190C177M015AS	2.0	12.50	0.98	1480	0073	0293	0513	T290C177M015(1)S
170.0	C	10	T190C177K015AS	2.0	12.50	0.98	1480	0074	0294	0514	T290C177K015(1)S
170.0	C	5	T190C177J015AS	2.0	12.50	0.98	1480	0075	0295	0515	T290C177J015(1)S
270.0	C	20	T190C277M015AS	2.0	16.00	0.79	1740	0076	0296	0516	T290C277M015(1)S
270.0	C	10	T190C277K015AS	2.0	16.00	0.79	1740	0077	0297	0517	T290C277K015(1)S
270.0	C	5	T190C277J015AS	2.0	16.00	0.79	1740	0078	0298	0518	T290C277J015(1)S
540.0	D	20	T190D547M015AS	6.0	20.00	0.49	2330	0079	0299	0519	T290D547M015(1)S
540.0	D	10	T190D547K015AS	6.0	20.00	0.49	2330	0080	0300	0520	T290D547K015(1)S
25 Volt Rating at +85°C (15 Volt Rating at +125°C)											
10.0	A	20	T190A106M025AS	1.0	2.00	2.66	715	0081	0301	0521	T290A106M025(1)S
10.0	A	10	T190A106K025AS	1.0	2.00	2.66	715	0082	0302	0522	T290A106K025(1)S
10.0	A	5	T190A106J025AS	1.0	2.00	2.66	715	0083	0303	0523	T290A106J025(1)S
22.0	A	20	T190A226M025AS	1.0	3.30	1.99	825	0084	0304	0524	T290A226M025(1)S
22.0	A	10	T190A226K025AS	1.0	3.30	1.99	825	0085	0305	0525	T290A226K025(1)S
22.0	A	5	T190A226J025AS	1.0	3.30	1.99	825	0086	0306	0526	T290A226J025(1)S
50.0	B	20	T190B506M025AS	1.0	5.50	1.46	1130	0087	0307	0527	T290B506M025(1)S
50.0	B	10	T190B506K025AS	1.0	5.50	1.46	1130	0088	0308	0528	T290B506K025(1)S
50.0	B	5	T190B506J025AS	1.0	5.50	1.46	1130	0089	0309	0529	T290B506J025(1)S
100.0	B	20	T190B107M025AS	1.0	7.50	0.99	1435	0090	0310	0530	T290B107M025(1)S
100.0	B	10	T190B107K025AS	1.0	7.50	0.99	1435	0091	0311	0531	T290B107K025(1)S
100.0	B	5	T190B107J025AS	1.0	7.50	0.99	1435	0092	0312	0532	T290B107J025(1)S
120.0	C	20	T190C127M025AS	2.0	10.50	1.16	1450	0093	0313	0533	T290C127M025(1)S
120.0	C	10	T190C127K025AS	2.0	10.50	1.16	1450	0094	0314	0534	T290C127K025(1)S
120.0	C	5	T190C127J025AS	2.0	10.50	1.16	1450	0095	0315	0535	T290C127J025(1)S
180.0	C	20	T190C187M025AS	2.0	13.00	0.96	1525	0096	0316	0536	T290C187M025(1)S
180.0	C	10	T190C187K025AS	2.0	13.00	0.96	1525	0097	0317	0537	T290C187K025(1)S
180.0	C	5	T190C187J025AS	2.0	13.00	0.96	1525	0098	0318	0538	T290C187J025(1)S
350.0	D	20	T190D357M025AS	7.0	17.50	0.67	1970	0099	0319	0539	T290D357M025(1)S
350.0	D	10	T190D357K025AS	7.0	17.50	0.67	1970	0100	0320	0540	T290D357K025(1)S
30 Volt Rating at +85°C (20 Volt Rating at +125°C)											
8.0	A	20	T190A805M030AS	1.0	2.00	3.32	640	0101	0321	0541	T290A805M030(1)S
8.0	A	10	T190A805K030AS	1.0	2.00	3.32	640	0102	0322	0542	T290A805K030(1)S
8.0	A	5	T190A805J030AS	1.0	2.00	3.32	640	0103	0323	0543	T290A805J030(1)S
15.0	A	20	T190A156M030AS	1.0	2.50	2.21	780	0104	0324	0544	T290A156M030(1)S
15.0	A	10	T190A156K030AS	1.0	2.50	2.21	780	0105	0325	0545	T290A156K030(1)S
15.0	A	5	T190A156J030AS	1.0	2.50	2.21	780	0106	0326	0546	T290A156J030(1)S
40.0	B	20	T190B406M030AS	1.0	5.00	1.66	1120	0107	0327	0547	T290B406M030(1)S
40.0	B	10	T190B406K030AS	1.0	5.00	1.66	1120	0108	0328	0548	T290B406K030(1)S
40.0	B	5	T190B406J030AS	1.0	5.00	1.66	1120	0109	0329	0549	T290B406J030(1)S
68.0	B	20	T190B686M030AS	1.0	6.50	1.27	1285	0110	0330	0550	T290B686M030(1)S
68.0	B	10	T190B686K030AS	1.0	6.50	1.27	1285	0111	0331	0551	T290B686K030(1)S
68.0	B	5	T190B686J030AS	1.0	6.50	1.27	1285	0112	0332	0552	T290B686J030(1)S
100.0	C	20	T190C107M030AS	2.0	8.50	1.13	1450	0113	0333	0553	T290C107M030(1)S
100.0	C	10	T190C107K030AS	2.0	8.50	1.13	1450	0114	0334	0554	T290C107K030(1)S
100.0	C	5	T190C107J030AS	2.0	8.50	1.13	1450	0115	0335	0555	T290C107J030(1)S
150.0	C	20	T190C157M030AS	2.0	11.50	1.02	1525	0116	0336	0556	T290C157M030(1)S
150.0	C	10	T190C157K030AS	2.0	11.50	1.02	1525	0117	0337	0557	T290C157K030(1)S
150.0	C	5	T190C157J030AS	2.0	11.50	1.02	1525	0118	0338	0558	T290C157J030(1)S
300.0	D	20	T190D307M030AS	8.0	15.50	0.69	1950	0119	0339	0559	T290D307M030(1)S
300.0	D	10	T190D307K030AS	8.0	15.50	0.69	1950	0120	0340	0560	T290D307K030(1)S

(1) To complete the KEMET part number, insert Failure Rate Level: M = (1.0); P = (0.1); and R = (.01)
(#) Dash number shall include letter "H" to indicate high vibration and shock requirements (i.e. 80g vibration and 500g shock)

T190/T290 (CLR90) Ratings & Part Number Reference

Cap µF	Case Size	Cap Tol.	KEMET Part Number	Max. D.C. Leakage µA +25°C	Max. D.F. @ 25°C 120 Hz	Max. ESR Ohms at +25°C 120 Hz	Max. Ripple Current mArms at 85°C 40 kHz	MIL-PRF-39006/30A (CLR90) Capacitors Dash Number Reference (#) Failure Rate (%/1000 Hrs)			KEMET Military Equivalent
								M(1.0)	P(0.1)	R(0.01)	
50 Volt Rating at +85°C (30 Volt Rating at +125°C)											
5.0	A	20	T190A505M050AS	1.0	1.50	3.98	580	0121	0341	0561	T290A505M050(1)S
5.0	A	10	T190A505K050AS	1.0	1.50	3.98	580	0122	0342	0562	T290A505K050(1)S
5.0	A	5	T190A505J050AS	1.0	1.50	3.98	580	0123	0343	0563	T290A505J050(1)S
10.0	A	20	T190A106M050AS	1.0	2.00	2.66	715	0124	0344	0564	T290A106M050(1)S
10.0	A	10	T190A106K050AS	1.0	2.00	2.66	715	0125	0345	0565	T290A106K050(1)S
10.0	A	5	T190A106J050AS	1.0	2.00	2.66	715	0126	0346	0566	T290A106J050(1)S
25.0	B	20	T190B256M050AS	1.0	4.00	2.13	1005	0127	0347	0567	T290B256M050(1)S
25.0	B	10	T190B256K050AS	1.0	4.00	2.13	1005	0128	0348	0568	T290B256K050(1)S
25.0	B	5	T190B256J050AS	1.0	4.00	2.13	1005	0129	0349	0569	T290B256J050(1)S
47.0	B	20	T190B476M050AS	1.0	5.50	1.56	1155	0130	0350	0570	T290B476M050(1)S
47.0	B	10	T190B476K050AS	1.0	5.50	1.56	1155	0131	0351	0571	T290B476K050(1)S
47.0	B	5	T190B476J050AS	1.0	5.50	1.56	1155	0132	0352	0572	T290B476J050(1)S
60.0	C	20	T190C606M050AS	2.0	6.00	1.33	1335	0133	0353	0573	T290C606M050(1)S
60.0	C	10	T190C606K050AS	2.0	6.00	1.33	1335	0134	0354	0574	T290C606K050(1)S
60.0	C	5	T190C606J050AS	2.0	6.00	1.33	1335	0135	0355	0575	T290C606J050(1)S
82.0	C	20	T190C826M050AS	2.0	7.50	1.22	1400	0136	0356	0576	T290C826M050(1)S
82.0	C	10	T190C826K050AS	2.0	7.50	1.22	1400	0137	0357	0577	T290C826K050(1)S
82.0	C	5	T190C826J050AS	2.0	7.50	1.22	1400	0138	0358	0578	T290C826J050(1)S
160.0	D	20	T190D167M050AS	8.0	8.50	0.71	1900	0139	0359	0579	T290D167M050(1)S
160.0	D	10	T190D167K050AS	8.0	8.50	0.71	1900	0140	0360	0580	T290D167K050(1)S
60 Volt Rating at +85°C (40 Volt Rating at +125°C)											
4.0	A	20	T190A405M060AS	1.0	1.40	4.65	525	0141	0361	0581	T290A405M060(1)S
4.0	A	10	T190A405K060AS	1.0	1.40	4.65	525	0142	0362	0582	T290A405K060(1)S
4.0	A	5	T190A405J060AS	1.0	1.40	4.65	525	0143	0363	0583	T290A405J060(1)S
8.2	A	20	T190A825M060AS	1.0	2.00	3.24	625	0144	0364	0584	T290A825M060(1)S
8.2	A	10	T190A825K060AS	1.0	2.00	3.24	625	0145	0365	0585	T290A825K060(1)S
8.2	A	5	T190A825J060AS	1.0	2.00	3.24	625	0146	0366	0586	T290A825J060(1)S
20.0	B	20	T190B206M060AS	1.0	3.50	2.32	930	0147	0367	0587	T290B206M060(1)S
20.0	B	10	T190B206K060AS	1.0	3.50	2.32	930	0148	0368	0588	T290B206K060(1)S
20.0	B	5	T190B206J060AS	1.0	3.50	2.32	930	0149	0369	0589	T290B206J060(1)S
39.0	B	20	T190B396M060AS	1.0	5.00	1.70	1110	0150	0370	0590	T290B396M060(1)S
39.0	B	10	T190B396K060AS	1.0	5.00	1.70	1110	0151	0371	0591	T290B396K060(1)S
39.0	B	5	T190B396J060AS	1.0	5.00	1.70	1110	0152	0372	0592	T290B396J060(1)S
50.0	C	20	T190C506M060AS	2.0	5.00	1.33	1330	0153	0373	0593	T290C506M060(1)S
50.0	C	10	T190C506K060AS	2.0	5.00	1.33	1330	0154	0374	0594	T290C506K060(1)S
50.0	C	5	T190C506J060AS	2.0	5.00	1.33	1330	0155	0375	0595	T290C506J060(1)S
68.0	C	20	T190C686M060AS	2.0	6.50	1.27	1365	0156	0376	0596	T290C686M060(1)S
68.0	C	10	T190C686K060AS	2.0	6.50	1.27	1365	0157	0377	0597	T290C686K060(1)S
68.0	C	5	T190C686J060AS	2.0	6.50	1.27	1365	0158	0378	0598	T290C686J060(1)S
140.0	D	20	T190D147M060AS	8.0	8.00	0.76	1850	0159	0379	0599	T290D147M060(1)S
140.0	D	10	T190D147K060AS	8.0	8.00	0.76	1850	0160	0380	0600	T290D147K060(1)S
75 Volt Rating at +85°C (50 Volt Rating at +125°C)											
3.5	A	20	T190A355M075AS	1.0	1.25	4.74	525	0161	0381	0601	T290A355M075(1)S
3.5	A	10	T190A355K075AS	1.0	1.25	4.74	525	0162	0382	0602	T290A355K075(1)S
3.5	A	5	T190A355J075AS	1.0	1.25	4.74	525	0163	0383	0603	T290A355J075(1)S
6.8	A	20	T190A685M075AS	1.0	1.75	3.42	610	0164	0384	0604	T290A685M075(1)S
6.8	A	10	T190A685K075AS	1.0	1.75	3.42	610	0165	0385	0605	T290A685K075(1)S
6.8	A	5	T190A685J075AS	1.0	1.75	3.42	610	0166	0386	0606	T290A685J075(1)S
15.0	B	20	T190B156M075AS	1.0	3.00	2.66	890	0167	0387	0607	T290B156M075(1)S
15.0	B	10	T190B156K075AS	1.0	3.00	2.66	890	0168	0388	0608	T290B156K075(1)S
15.0	B	5	T190B156J075AS	1.0	3.00	2.66	890	0169	0389	0609	T290B156J075(1)S
33.0	B	20	T190B336M075AS	1.0	5.00	2.01	1000	0170	0390	0610	T290B336M075(1)S
33.0	B	10	T190B336K075AS	1.0	5.00	2.01	1000	0171	0391	0611	T290B336K075(1)S
33.0	B	5	T190B336J075AS	1.0	5.00	2.01	1000	0172	0392	0612	T290B336J075(1)S
40.0	C	20	T190C406M075AS	2.0	4.50	1.50	1250	0173	0393	0613	T290C406M075(1)S
40.0	C	10	T190C406K075AS	2.0	4.50	1.50	1250	0174	0394	0614	T290C406K075(1)S
40.0	C	5	T190C406J075AS	2.0	4.50	1.50	1250	0175	0395	0615	T290C406J075(1)S
56.0	C	20	T190C566M075AS	2.0	5.50	1.31	1335	0176	0396	0616	T290C566M075(1)S
56.0	C	10	T190C566K075AS	2.0	5.50	1.31	1335	0177	0397	0617	T290C566K075(1)S
56.0	C	5	T190C566J075AS	2.0	5.50	1.31	1335	0178	0398	0618	T290C566J075(1)S
110.0	D	20	T190D117M075AS	9.0	6.00	0.73	1850	0179	0399	0619	T290D117M075(1)S
110.0	D	10	T190D117K075AS	9.0	6.00	0.73	1850	0180	0400	0620	T290D117K075(1)S

(1) To complete the KEMET part number, insert Failure Rate Level: M = (1.0); P = (0.1); and R = (.01)
(#) Dash number shall include letter "H" to indicate high vibration and shock requirements (i.e. 80g vibration and 500g shock)

T190/T290 (CLR90) Ratings & Part Number Reference

Cap µF	Case Size	Cap Tol.	KEMET Part Number	Max. D.C. Leakage µA +25°C	Max. D.F. @ 25°C 120 Hz	Max. ESR Ohms at +25°C 120 Hz	Max. Ripple Current mArms at 85°C 40 kHz	MIL-PRF-39006/30A (CLR90) Capacitors Dash Number Reference (#) Failure Rate (%/1000 Hrs) M(1.0)	P(0.1)	R(0.01)	KEMET Military Equivalent
100 Volt Rating at +85°C (65 Volt Rating at +125°C)											
2.5	A	20	T190A255M100AS	1.0	1.00	5.31	505	0181	0401	0621	T290A255M100(1)S
2.5	A	10	T190A255K100AS	1.0	1.00	5.31	505	0182	0402	0622	T290A255K100(1)S
2.5	A	5	T190A255J100AS	1.0	1.00	5.31	505	0183	0403	0623	T290A255J100(1)S
4.7	A	20	T190A475M100AS	1.0	1.50	4.24	565	0184	0404	0624	T290A475M100(1)S
4.7	A	10	T190A475K100AS	1.0	1.50	4.24	565	0185	0405	0625	T290A475K100(1)S
4.7	A	5	T190A475J100AS	1.0	1.50	4.24	565	0186	0406	0626	T290A475J100(1)S
11.0	B	20	T190B116M100AS	1.0	2.50	3.02	835	0187	0407	0627	T290B116M100(1)S
11.0	B	10	T190B116K100AS	1.0	2.50	3.02	835	0188	0408	0628	T290B116K100(1)S
11.0	B	5	T190B116J100AS	1.0	2.50	3.02	835	0189	0409	0629	T290B116J100(1)S
22.0	B	20	T190B226M100AS	1.0	3.75	2.26	965	0190	0410	0630	T290B226M100(1)S
22.0	B	10	T190B226K100AS	1.0	3.75	2.26	965	0191	0411	0631	T290B226K100(1)S
22.0	B	5	T190B226J100AS	1.0	3.75	2.26	965	0192	0412	0632	T290B226J100(1)S
30.0	C	20	T190C306M100AS	2.0	3.50	1.55	1240	0193	0413	0633	T290C306M100(1)S
30.0	C	10	T190C306K100AS	2.0	3.50	1.55	1240	0194	0414	0634	T290C306K100(1)S
30.0	C	5	T190C306J100AS	2.0	3.50	1.55	1240	0195	0415	0635	T290C306J100(1)S
43.0	C	20	T190C436M100AS	2.0	4.25	1.31	1335	0196	0416	0636	T290C436M100(1)S
43.0	C	10	T190C436K100AS	2.0	4.25	1.31	1335	0197	0417	0637	T290C436K100(1)S
43.0	C	5	T190C436J100AS	2.0	4.25	1.31	1335	0198	0418	0638	T290C436J100(1)S
86.0	D	20	T190D866M100AS	9.0	5.00	0.77	1800	0199	0419	0639	T290D866M100(1)S
86.0	D	10	T190D866K100AS	9.0	5.00	0.77	1800	0200	0420	0640	T290D866K100(1)S
125 Volt Rating at +85°C (85 Volt Rating at +125°C)											
1.7	A	20	T190A175M125AS	1.0	1.00	7.81	415	0201	0421	0641	T290A175M125(1)S
1.7	A	10	T190A175K125AS	1.0	1.00	7.81	415	0202	0422	0642	T290A175K125(1)S
1.7	A	5	T190A175J125AS	1.0	1.00	7.81	415	0203	0423	0643	T290A175J125(1)S
3.6	A	20	T190A365M125AS	1.0	1.35	4.98	520	0204	0424	0644	T290A365M125(1)S
3.6	A	10	T190A365K125AS	1.0	1.35	4.98	520	0205	0425	0645	T290A365K125(1)S
3.6	A	5	T190A365J125AS	1.0	1.35	4.98	520	0206	0426	0646	T290A365J125(1)S
9.0	B	20	T190B905M125AS	1.0	2.50	3.69	755	0207	0427	0647	T290B905M125(1)S
9.0	B	10	T190B905K125AS	1.0	2.50	3.69	755	0208	0428	0648	T290B905K125(1)S
9.0	B	5	T190B905J125AS	1.0	2.50	3.69	755	0209	0429	0649	T290B905J125(1)S
14.0	B	20	T190B146M125AS	1.0	3.00	2.85	860	0210	0430	0650	T290B146M125(1)S
14.0	B	10	T190B146K125AS	1.0	3.00	2.85	860	0211	0431	0651	T290B146K125(1)S
14.0	B	5	T190B146J125AS	1.0	3.00	2.85	860	0212	0432	0652	T290B146J125(1)S
18.0	C	20	T190C186M125AS	2.0	2.50	1.85	1130	0213	0433	0653	T290C186M125(1)S
18.0	C	10	T190C186K125AS	2.0	2.50	1.85	1130	0214	0434	0654	T290C186K125(1)S
18.0	C	5	T190C186J125AS	2.0	2.50	1.85	1130	0215	0435	0655	T290C186J125(1)S
25.0	C	20	T190C256M125AS	2.0	3.00	1.59	1200	0216	0436	0656	T290C256M125(1)S
25.0	C	10	T190C256K125AS	2.0	3.00	1.59	1200	0217	0437	0657	T290C256K125(1)S
25.0	C	5	T190C256J125AS	2.0	3.00	1.59	1200	0218	0438	0658	T290C256J125(1)S
56.0	D	20	T190D566M125AS	10.0	3.25	0.77	1800	0219	0439	0659	T290D566M125(1)S
56.0	D	10	T190D566K125AS	10.0	3.25	0.77	1800	0220	0440	0660	T290D566K125(1)S

(1) To complete the KEMET part number, insert Failure Rate Level: M = (1.0); P = (0.1); and R = (.01)
(#) Dash number shall include letter "H" to indicate high vibration and shock requirements (i.e. 80g vibration and 500g shock)

T191/T291 (CLR91) Ratings & Part Number Reference

Cap µF	Case Size	Cap Tol.	KEMET Part Number	Max. D.C. Leakage µA +25°C	Max. D.F. @ 25°C 120 Hz	Max. ESR Ohms at +25°C 120 Hz	Max. Ripple Current mArms at 85°C 40 kHz	MIL-PRF-39006/31A (CLR91) Capacitors Dash Number Reference (#) Failure Rate (%/1000 Hrs) M(1.0)	P(0.1)	R(0.01)	KEMET Military Equivalent
6 Volt Rating at +85°C (4 Volt Rating at +125°C)											
220.0	A	20	T191A227M006AS	2.0	25.00	1.51	1000	0001	0089	0177	T291A227M006(1)S
220.0	A	10	T191A227K006AS	2.0	25.00	1.51	1000	0002	0090	0178	T291A227K006(1)S
820.0	B	20	T191B827M006AS	3.0	77.50	1.26	1500	0003	0091	0179	T291B827M006(1)S
820.0	B	10	T191B827K006AS	3.0	77.50	1.26	1500	0004	0092	0180	T291B827K006(1)S
1500.0	C	20	T191C158M006AS	5.0	86.00	0.76	1900	0005	0093	0181	T291C158M006(1)S
1500.0	C	10	T191C158K006AS	5.0	86.00	0.76	1900	0006	0094	0182	T291C158K006(1)S
2200.0	D	20	T191D228M006AS	6.0	85.00	0.52	2300	0007	0095	0183	T291D228M006(1)S
2200.0	D	10	T191D228K006AS	6.0	85.00	0.52	2300	0008	0096	0184	T291D228K006(1)S
8 Volt Rating at +85°C (5 Volt Rating at +125°C)											
180.0	A	20	T191A187M008AS	2.0	20.50	1.51	1000	0009	0097	0185	T291A187M008(1)S
180.0	A	10	T191A187K008AS	2.0	20.50	1.51	1000	0010	0098	0186	T291A187K008(1)S
680.0	B	20	T191B687M008AS	3.0	65.00	1.27	1500	0011	0099	0187	T291B687M008(1)S
680.0	B	10	T191B687K008AS	3.0	65.00	1.27	1500	0012	0100	0188	T291B687K008(1)S
1500.0	C	20	T191C158M008AS	5.0	85.00	0.75	1900	0013	0101	0189	T291C158M008(1)S
1500.0	C	10	T191C158K008AS	5.0	85.00	0.75	1900	0014	0102	0190	T291C158K008(1)S
1800.0	D	20	T191D188M008AS	7.0	69.00	0.51	2300	0015	0103	0191	T291D188M008(1)S
1800.0	D	10	T191D188K008AS	7.0	69.00	0.51	2300	0016	0104	0192	T291D188K008(1)S
10 Volt Rating at +85°C (7 Volt Rating at +125°C)											
150.0	A	20	T191A157M010AS	2.0	17.00	1.51	900	0017	0105	0193	T291A157M010(1)S
150.0	A	10	T191A157K010AS	2.0	17.00	1.51	900	0018	0106	0194	T291A157K010(1)S
560.0	B	20	T191B567M010AS	3.0	53.00	1.26	1450	0019	0107	0195	T291B567M010(1)S
560.0	B	10	T191B567K010AS	3.0	53.00	1.26	1450	0020	0108	0196	T291B567K010(1)S
1200.0	C	20	T191C128M010AS	5.0	68.50	0.76	1850	0021	0109	0197	T291C128M010(1)S
1200.0	C	10	T191C128K010AS	5.0	68.50	0.76	1850	0022	0110	0198	T291C128K010(1)S
1500.0	D	20	T191D158M010AS	7.0	57.00	0.51	2300	0023	0111	0199	T291D158M010(1)S
1500.0	D	10	T191D158K010AS	7.0	57.00	0.51	2300	0024	0112	0200	T291D158K010(1)S
15 Volt Rating at +85°C (10 Volt Rating at +125°C)											
100.0	A	20	T191A107M015AS	2.0	15.00	1.99	900	0025	0113	0201	T291A107M015(1)S
100.0	A	10	T191A107K015AS	2.0	15.00	1.99	900	0026	0114	0202	T291A107K015(1)S
390.0	B	20	T191B397M015AS	3.0	37.00	1.26	1450	0027	0115	0203	T291B397M015(1)S
390.0	B	10	T191B397K015AS	3.0	37.00	1.26	1450	0028	0116	0204	T291B397K015(1)S
820.0	C	20	T191C827M015AS	6.0	55.50	0.90	1800	0029	0117	0205	T291C827M015(1)S
820.0	C	10	T191C827K015AS	6.0	55.50	0.90	1800	0030	0118	0206	T291C827K015(1)S
1000.0	D	20	T191D108M015AS	8.0	46.00	0.61	2300	0031	0119	0207	T291D108M015(1)S
1000.0	D	10	T191D108K015AS	8.0	46.00	0.61	2300	0032	0120	0208	T291D108K015(1)S
25 Volt Rating at +85°C (15 Volt Rating at +125°C)											
68.0	A	20	T191A686M025AS	2.0	11.00	2.15	850	0033	0121	0209	T291A686M025(1)S
68.0	A	10	T191A686K025AS	2.0	11.00	2.15	850	0034	0122	0210	T291A686K025(1)S
270.0	B	20	T191B277M025AS	3.0	27.50	1.35	1400	0035	0123	0211	T291B277M025(1)S
270.0	B	10	T191B277K025AS	3.0	27.50	1.35	1400	0036	0124	0212	T291B277K025(1)S
560.0	C	20	T191C567M025AS	7.0	38.00	0.90	1750	0037	0125	0213	T291C567M025(1)S
560.0	C	10	T191C567K025AS	7.0	38.00	0.90	1750	0038	0126	0214	T291C567K025(1)S
680.0	D	20	T191D687M025AS	8.0	31.50	0.62	2100	0039	0127	0215	T291D687M025(1)S
680.0	D	10	T191D687K025AS	8.0	31.50	0.62	2100	0040	0128	0216	T291D687K025(1)S
30 Volt Rating at +85°C (20 Volt Rating at +125°C)											
56.0	A	20	T191A566M030AS	2.0	11.00	2.61	800	0041	0129	0217	T291A566M030(1)S
56.0	A	10	T191A566K030AS	2.0	11.00	2.61	800	0042	0130	0218	T291A566K030(1)S
220.0	B	20	T191B227M030AS	3.0	21.00	1.27	1200	0043	0131	0219	T291B227M030(1)S
220.0	B	10	T191B227K030AS	3.0	21.00	1.27	1200	0044	0132	0220	T291B227K030(1)S
470.0	C	20	T191C477M030AS	8.0	32.00	0.91	1500	0045	0133	0221	T291C477M030(1)S
470.0	C	10	T191C477K030AS	8.0	32.00	0.91	1500	0046	0134	0222	T291C477K030(1)S
560.0	D	20	T191D567M030AS	9.0	27.50	0.65	2000	0047	0135	0223	T291D567M030(1)S
560.0	D	10	T191D567K030AS	9.0	27.50	0.65	2000	0048	0136	0224	T291D567K030(1)S

(1) To complete the KEMET part number, insert Failure Rate Level: M = (1.0); P = (0.1); and R = (.01)
(#) Dash number shall include letter "H" to indicate high vibration and shock requirements (i.e. 80g vibration and 500g shock)

T191/T291 (CLR91) Ratings & Part Number Reference

Cap µF	Case Size	Cap Tol.	KEMET Part Number	Max. D.C. Leakage µA +25°C	Max. D.F. @ 25°C 120 Hz	Max. ESR Ohms at +25°C 120 Hz	Max. Ripple Current mArms at 85°C 40 kHz	MIL-PRF-39006/31A (CLR91) Capacitors Dash Number Reference (#) Failure Rate (%/1000 Hrs)			KEMET Military Equivalent
								M(1.0)	P(0.1)	R(0.01)	
50 Volt Rating at +85°C (30 Volt Rating at +125°C)											
33.0	A	20	T191A336M050AS	2.0	6.15	2.48	700	0049	0137	0225	T291A336M050(1)S
33.0	A	10	T191A336K050AS	2.0	6.15	2.48	700	0050	0138	0226	T291A336K050(1)S
120.0	B	20	T191B127M050AS	4.0	11.25	1.25	1200	0051	0139	0227	T291B127M050(1)S
120.0	B	10	T191B127K050AS	4.0	11.25	1.25	1200	0052	0140	0228	T291B127K050(1)S
270.0	C	20	T191C277M050AS	8.0	18.50	0.91	1450	0053	0141	0229	T291C277M050(1)S
270.0	C	10	T191C277K050AS	8.0	18.50	0.91	1450	0054	0142	0230	T291C277K050(1)S
330.0	D	20	T191D337M050AS	9.0	19.00	0.77	1900	0055	0143	0231	T291D337M050(1)S
330.0	D	10	T191D337K050AS	9.0	19.00	0.77	1900	0056	0144	0232	T291D337K050(1)S
60 Volt Rating at +85°C (40 Volt Rating at +125°C)											
27.0	A	20	T191A276M060AS	3.0	5.10	2.51	700	0057	0145	0233	T291A276M060(1)S
27.0	A	10	T191A276K060AS	3.0	5.10	2.51	700	0058	0146	0234	T291A276K060(1)S
100.0	B	20	T191B107M060AS	4.0	9.50	1.26	1100	0059	0147	0235	T291B107M060(1)S
100.0	B	10	T191B107K060AS	4.0	9.50	1.26	1100	0060	0148	0236	T291B107K060(1)S
220.0	C	20	T191C227M060AS	8.0	15.00	0.91	1400	0061	0149	0237	T291C227M060(1)S
220.0	C	10	T191C227K060AS	8.0	15.00	0.91	1400	0062	0150	0238	T291C227K060(1)S
270.0	D	20	T191D277M060AS	9.0	13.50	0.67	1850	0063	0151	0239	T291D277M060(1)S
270.0	D	10	T191D277K060AS	9.0	13.50	0.67	1850	0064	0152	0240	T291D277K060(1)S
75 Volt Rating at +85°C (50 Volt Rating at +125°C)											
22.0	A	20	T191A226M075AS	3.0	4.25	2.57	600	0065	0153	0241	T291A226M075(1)S
22.0	A	10	T191A226K075AS	3.0	4.25	2.57	600	0066	0154	0242	T291A226K075(1)S
82.0	B	20	T191B826M075AS	4.0	7.60	1.23	1000	0067	0155	0243	T291B826M075(1)S
82.0	B	10	T191B826K075AS	4.0	7.60	1.23	1000	0068	0156	0244	T291B826K075(1)S
180.0	C	20	T191C187M075AS	9.0	12.20	0.90	1300	0069	0157	0245	T291C187M075(1)S
180.0	C	10	T191C187K075AS	9.0	12.20	0.90	1300	0070	0158	0246	T291C187K075(1)S
220.0	D	20	T191D227M075AS	10.0	18.50	1.12	1800	0071	0159	0247	T291D227M075(1)S
220.0	D	10	T191D227K075AS	10.0	18.50	1.12	1800	0072	0160	0248	T291D227K075(1)S
100 Volt Rating at +85°C (65 Volt Rating at +125°C)											
10.0	A	20	T191A106M100AS	3.0	2.25	2.99	800	0073	0161	0249	T291A106M100(1)S
10.0	A	10	T191A106K100AS	3.0	2.25	2.99	800	0074	0162	0250	T291A106K100(1)S
39.0	B	20	T191B396M100AS	5.0	5.20	1.77	1300	0075	0163	0251	T291B396M100(1)S
39.0	B	10	T191B396K100AS	5.0	5.20	1.77	1300	0076	0164	0252	T291B396K100(1)S
68.0	C	20	T191C686M100AS	10.0	5.65	1.11	1600	0077	0165	0253	T291C686M100(1)S
68.0	C	10	T191C686K100AS	10.0	5.65	1.11	1600	0078	0166	0254	T291C686K100(1)S
120.0	D	20	T191D127M100AS	12.0	12.50	1.38	2000	0079	0167	0255	T291D127M100(1)S
120.0	D	10	T191D127K100AS	12.0	12.50	1.38	2000	0080	0168	0256	T291D127K100(1)S
125 Volt Rating at +85°C (85 Volt Rating at +125°C)											
6.8	A	20	T191A685M125AS	3.0	3.00	5.86	700	0081	0169	0257	T291A685M125(1)S
6.8	A	10	T191A685K125AS	3.0	3.00	5.86	700	0082	0170	0258	T291A685K125(1)S
27.0	B	20	T191B276M125AS	5.0	3.60	1.77	1200	0083	0171	0259	T291B276M125(1)S
27.0	B	10	T191B276K125AS	5.0	3.60	1.77	1200	0084	0172	0260	T291B276K125(1)S
47.0	C	20	T191C476M125AS	10.0	3.95	1.12	1500	0085	0173	0261	T291C476M125(1)S
47.0	C	10	T191C476K125AS	10.0	3.95	1.12	1500	0086	0174	0262	T291C476K125(1)S
82.0	D	20	T191D826M125AS	12.0	8.70	1.41	1900	0087	0175	0263	T291D826M125(1)S
82.0	D	10	T191D826K125AS	12.0	8.70	1.41	1900	0088	0176	0264	T291D826K125(1)S

(1) To complete the KEMET part number, insert Failure Rate Level: M = (1.0); P = (0.1); and R = (.01)
(#) Dash number shall include letter "H" to indicate high vibration and shock requirements (i.e. 80g vibration and 500g shock)

T192/T292 (CLR79) Ratings & Part Number Reference

Cap µF	Case Size	Cap Tol.	KEMET Part Number	Max. D.C. Leakage µA +25°C	Max. D.F. @ 25°C 120 Hz	Max. ESR Ohms at +25°C 120 Hz	Max. Ripple Current mArms at 85°C 40 kHz	MIL-PRF-39006/22F (CLR79) Capacitors Dash Number Reference (#) Failure Rate (%/1000 Hrs) M(1.0)	P(0.1)	R(0.01)	KEMET Military Equivalent
6 Volt Rating at +85°C (4 Volt Rating at +125°C)											
30.0	A	20	T192A306M006AS	1.0	9.0	3.98	820	0001	0221	0441	T292A306M006(1)S
30.0	A	10	T192A306K006AS	1.0	9.0	3.98	820	0002	0222	0442	T292A306K006(1)S
30.0	A	5	T192A306J006AS	1.0	9.0	3.98	820	0003	0223	0443	T292A306J006(1)S
68.0	A	20	T192A686M006AS	1.0	15.0	3.16	960	0004	0224	0444	T292A686M006(1)S
68.0	A	10	T192A686K006AS	1.0	15.0	3.16	960	0005	0225	0445	T292A686K006(1)S
68.0	A	5	T192A686J006AS	1.0	15.0	3.16	960	0006	0226	0446	T292A686J006(1)S
140.0	B	20	T192B147M006AS	1.0	21.0	1.99	1200	0007	0227	0447	T292B147M006(1)S
140.0	B	10	T192B147K006AS	1.0	21.0	1.99	1200	0008	0228	0448	T292B147K006(1)S
140.0	B	5	T192B147J006AS	1.0	21.0	1.99	1200	0009	0229	0449	T292B147J006(1)S
270.0	B	20	T192B277M006AS	1.0	45.0	2.21	1375	0010	0230	0450	T292B277M006(1)S
270.0	B	10	T192B277K006AS	1.0	45.0	2.21	1375	0011	0231	0451	T292B277K006(1)S
270.0	B	5	T192B277J006AS	1.0	45.0	2.21	1375	0012	0232	0452	T292B277J006(1)S
330.0	C	20	T192C337M006AS	2.0	36.0	1.45	1800	0013	0233	0453	T292C337M006(1)S
330.0	C	10	T192C337K006AS	2.0	36.0	1.45	1800	0014	0234	0454	T292C337K006(1)S
330.0	C	5	T192C337J006AS	2.0	36.0	1.45	1800	0015	0235	0455	T292C337J006(1)S
560.0	C	20	T192C567M006AS	2.0	55.0	1.30	1900	0016	0236	0456	T292C567M006(1)S
560.0	C	10	T192C567K006AS	2.0	55.0	1.30	1900	0017	0237	0457	T292C567K006(1)S
560.0	C	5	T192C567J006AS	2.0	55.0	1.30	1900	0018	0238	0458	T292C567J006(1)S
1200.0	D	20	T192D128M006AS	3.0	90.0	1.00	2265	0019	0239	0459	T292D128M006(1)S
1200.0	D	10	T192D128K006AS	3.0	90.0	1.00	2265	0020	0240	0460	T292D128K006(1)S
8 Volt Rating at +85°C (5 Volt Rating at +125°C)											
25.0	A	20	T192A256M008AS	1.0	7.5	3.98	820	0021	0241	0461	T292A256M008(1)S
25.0	A	10	T192A256K008AS	1.0	7.5	3.98	820	0022	0242	0462	T292A256K008(1)S
25.0	A	5	T192A256J008AS	1.0	7.5	3.98	820	0023	0243	0463	T292A256J008(1)S
56.0	A	20	T192A566M008AS	1.0	14.0	3.32	900	0024	0244	0464	T292A566M008(1)S
56.0	A	10	T192A566K008AS	1.0	14.0	3.32	900	0025	0245	0465	T292A566K008(1)S
56.0	A	5	T192A566J008AS	1.0	14.0	3.32	900	0026	0246	0466	T292A566J008(1)S
120.0	B	20	T192B127M008AS	1.0	20.0	2.21	1220	0027	0247	0467	T292B127M008(1)S
120.0	B	10	T192B127K008AS	1.0	20.0	2.21	1220	0028	0248	0468	T292B127K008(1)S
120.0	B	5	T192B127J008AS	1.0	20.0	2.21	1220	0029	0249	0469	T292B127J008(1)S
220.0	B	20	T192B227M008AS	1.0	37.0	2.23	1370	0030	0250	0470	T292B227M008(1)S
220.0	B	10	T192B227K008AS	1.0	37.0	2.23	1370	0031	0251	0471	T292B227K008(1)S
220.0	B	5	T192B227J008AS	1.0	37.0	2.23	1370	0032	0252	0472	T292B227J008(1)S
290.0	C	20	T192C297M008AS	2.0	34.0	1.56	1770	0033	0253	0473	T292C297M008(1)S
290.0	C	10	T192C297K008AS	2.0	34.0	1.56	1770	0034	0254	0474	T292C297K008(1)S
290.0	C	5	T192C297J008AS	2.0	34.0	1.56	1770	0035	0255	0475	T292C297J008(1)S
430.0	C	20	T192C437M008AS	2.0	46.0	1.42	1825	0036	0256	0476	T292C437M008(1)S
430.0	C	10	T192C437K008AS	2.0	46.0	1.42	1825	0037	0257	0477	T292C437K008(1)S
430.0	C	5	T192C437J008AS	2.0	46.0	1.42	1825	0038	0258	0478	T292C437J008(1)S
850.0	D	20	T192D857M008AS	4.0	60.0	0.94	2330	0039	0259	0479	T292D857M008(1)S
850.0	D	10	T192D857K008AS	4.0	60.0	0.94	2330	0040	0260	0480	T292D857K008(1)S
10 Volt Rating at +85°C (7 Volt Rating at +125°C)											
20.0	A	20	T192A206M010AS	1.0	6.0	3.98	820	0041	0261	0481	T292A206M010(1)S
20.0	A	10	T192A206K010AS	1.0	6.0	3.98	820	0042	0262	0482	T292A206K010(1)S
20.0	A	5	T192A206J010AS	1.0	6.0	3.98	820	0043	0263	0483	T292A206J010(1)S
47.0	A	20	T192A476M010AS	1.0	13.0	3.67	855	0044	0264	0484	T292A476M010(1)S
47.0	A	10	T192A476K010AS	1.0	13.0	3.67	855	0045	0265	0485	T292A476K010(1)S
47.0	A	5	T192A476J010AS	1.0	13.0	3.67	855	0046	0266	0486	T292A476J010(1)S
100.0	B	20	T192B107M010AS	1.0	15.0	1.99	1200	0047	0267	0487	T292B107M010(1)S
100.0	B	10	T192B107K010AS	1.0	15.0	1.99	1200	0048	0268	0488	T292B107K010(1)S
100.0	B	5	T192B107J010AS	1.0	15.0	1.99	1200	0049	0269	0489	T292B107J010(1)S
180.0	B	20	T192B187M010AS	1.0	30.0	2.21	1365	0050	0270	0490	T292B187M010(1)S
180.0	B	10	T192B187K010AS	1.0	30.0	2.21	1365	0051	0271	0491	T292B187K010(1)S
180.0	B	5	T192B187J010AS	1.0	30.0	2.21	1365	0052	0272	0492	T292B187J010(1)S
250.0	C	20	T192C257M010AS	2.0	30.0	1.59	1720	0053	0273	0493	T292C257M010(1)S
250.0	C	10	T192C257K010AS	2.0	30.0	1.59	1720	0054	0274	0494	T292C257K010(1)S
250.0	C	5	T192C257J010AS	2.0	30.0	1.59	1720	0055	0275	0495	T292C257J010(1)S
390.0	C	20	T192C397M010AS	2.0	44.0	1.50	1800	0056	0276	0496	T292C397M010(1)S
390.0	C	10	T192C397K010AS	2.0	44.0	1.50	1800	0057	0277	0497	T292C397K010(1)S
390.0	C	5	T192C397J010AS	2.0	44.0	1.50	1800	0058	0278	0498	T292C397J010(1)S
750.0	D	20	T192D757M010AS	4.0	50.0	0.88	2360	0059	0279	0499	T292D757M010(1)S
750.0	D	10	T192D757K010AS	4.0	50.0	0.88	2360	0060	0280	0500	T292D757K010(1)S

(1) To complete the KEMET part number, insert Failure Rate Level: M = (1.0); P = (0.1); and R = (.01)
(#) Dash number shall include letter “H” to indicate high vibration and shock requirements (i.e. 80g vibration and 500g shock)

T192/T292 (CLR79) Ratings & Part Number Reference

Cap µF	Case Size	Cap Tol.	KEMET Part Number	Max. D.C. Leakage µA +25°C	Max. D.F. @ 25°C 120 Hz	Max. ESR Ohms at +25°C 120 Hz	Max. Ripple Current mArms at 85°C 40 kHz	MIL-PRF-39006/22F (CLR79) Capacitors Dash Number Reference (#) Failure Rate (%/1000 Hrs)			KEMET Military Equivalent
								M(1.0)	P(0.1)	R(0.01)	
15 Volt Rating at +85°C (10 Volt Rating at +125°C)											
15.0	A	20	T192A156M015AS	1.0	5.0	4.42	780	0061	0281	0501	T292A156M015(1)S
15.0	A	10	T192A156K015AS	1.0	5.0	4.42	780	0062	0282	0502	T292A156K015(1)S
15.0	A	5	T192A156J015AS	1.0	5.0	4.42	780	0063	0283	0503	T292A156J015(1)S
33.0	A	20	T192A336M015AS	1.0	10.0	4.02	820	0064	0284	0504	T292A336M015(1)S
33.0	A	10	T192A336K015AS	1.0	10.0	4.02	820	0065	0285	0505	T292A336K015(1)S
33.0	A	5	T192A336J015AS	1.0	10.0	4.02	820	0066	0286	0506	T292A336J015(1)S
70.0	B	20	T192B706M015AS	1.0	13.0	2.46	1150	0067	0287	0507	T292B706M015(1)S
70.0	B	10	T192B706K015AS	1.0	13.0	2.46	1150	0068	0288	0508	T292B706K015(1)S
70.0	B	5	T192B706J015AS	1.0	13.0	2.46	1150	0069	0289	0509	T292B706J015(1)S
120.0	B	20	T192B127M015AS	1.0	18.0	1.99	1450	0070	0290	0510	T292B127M015(1)S
120.0	B	10	T192B127K015AS	1.0	18.0	1.99	1450	0071	0291	0511	T292B127K015(1)S
120.0	B	5	T192B127J015AS	1.0	18.0	1.99	1450	0072	0292	0512	T292B127J015(1)S
170.0	C	20	T192C177M015AS	2.0	25.0	1.95	1480	0073	0293	0513	T292C177M015(1)S
170.0	C	10	T192C177K015AS	2.0	25.0	1.95	1480	0074	0294	0514	T292C177K015(1)S
170.0	C	5	T192C177J015AS	2.0	25.0	1.95	1480	0075	0295	0515	T292C177J015(1)S
270.0	C	20	T192C277M015AS	2.0	32.0	1.57	1740	0076	0296	0516	T292C277M015(1)S
270.0	C	10	T192C277K015AS	2.0	32.0	1.57	1740	0077	0297	0517	T292C277K015(1)S
270.0	C	5	T192C277J015AS	2.0	32.0	1.57	1740	0078	0298	0518	T292C277J015(1)S
540.0	D	20	T192D547M015AS	6.0	40.0	0.98	2330	0079	0299	0519	T292D547M015(1)S
540.0	D	10	T192D547K015AS	6.0	40.0	0.98	2330	0080	0300	0520	T292D547K015(1)S
25 Volt Rating at +85°C - 15 Volt Rating at +125°C											
10.0	A	20	T192A106M025AS	1.0	4.0	5.31	715	0081	0301	0521	T292A106M025(1)S
10.0	A	10	T192A106K025AS	1.0	4.0	5.31	715	0082	0302	0522	T292A106K025(1)S
10.0	A	5	T192A106J025AS	1.0	4.0	5.31	715	0083	0303	0523	T292A106J025(1)S
22.0	A	20	T192A226M025AS	1.0	6.6	3.98	825	0084	0304	0524	T292A226M025(1)S
22.0	A	10	T192A226K025AS	1.0	6.6	3.98	825	0085	0305	0525	T292A226K025(1)S
22.0	A	5	T192A226J025AS	1.0	6.6	3.98	825	0086	0306	0526	T292A226J025(1)S
50.0	B	20	T192B506M025AS	1.0	11.0	2.92	1130	0087	0307	0527	T292B506M025(1)S
50.0	B	10	T192B506K025AS	1.0	11.0	2.92	1130	0088	0308	0528	T292B506K025(1)S
50.0	B	5	T192B506J025AS	1.0	11.0	2.92	1130	0089	0309	0529	T292B506J025(1)S
100.0	B	20	T192B107M025AS	1.0	15.0	1.99	1435	0090	0310	0530	T292B107M025(1)S
100.0	B	10	T192B107K025AS	1.0	15.0	1.99	1435	0091	0311	0531	T292B107K025(1)S
100.0	B	5	T192B107J025AS	1.0	15.0	1.99	1435	0092	0312	0532	T292B107J025(1)S
120.0	C	20	T192C127M025AS	2.0	21.0	2.32	1450	0093	0313	0533	T292C127M025(1)S
120.0	C	10	T192C127K025AS	2.0	21.0	2.32	1450	0094	0314	0534	T292C127K025(1)S
120.0	C	5	T192C127J025AS	2.0	21.0	2.32	1450	0095	0315	0535	T292C127J025(1)S
180.0	C	20	T192C187M025AS	2.0	26.0	1.92	1525	0096	0316	0536	T292C187M025(1)S
180.0	C	10	T192C187K025AS	2.0	26.0	1.92	1525	0097	0317	0537	T292C187K025(1)S
180.0	C	5	T192C187J025AS	2.0	26.0	1.92	1525	0098	0318	0538	T292C187J025(1)S
350.0	D	20	T192D357M025AS	7.0	35.0	1.33	1970	0099	0319	0539	T292D357M025(1)S
350.0	D	10	T192D357K025AS	7.0	35.0	1.33	1970	0100	0320	0540	T292D357K025(1)S
30 Volt Rating at +85°C - 20 Volt Rating at +125°C											
8.0	A	20	T192A805M030AS	1.0	4.0	6.64	640	0101	0321	0541	T292A805M030(1)S
8.0	A	10	T192A805K030AS	1.0	4.0	6.64	640	0102	0322	0542	T292A805K030(1)S
8.0	A	5	T192A805J030AS	1.0	4.0	6.64	640	0103	0323	0543	T292A805J030(1)S
15.0	A	20	T192A156M030AS	1.0	5.0	4.42	780	0104	0324	0544	T292A156M030(1)S
15.0	A	10	T192A156K030AS	1.0	5.0	4.42	780	0105	0325	0545	T292A156K030(1)S
15.0	A	5	T192A156J030AS	1.0	5.0	4.42	780	0106	0326	0546	T292A156J030(1)S
40.0	B	20	T192B406M030AS	1.0	10.0	3.32	1120	0107	0327	0547	T292B406M030(1)S
40.0	B	10	T192B406K030AS	1.0	10.0	3.32	1120	0108	0328	0548	T292B406K030(1)S
40.0	B	5	T192B406J030AS	1.0	10.0	3.32	1120	0109	0329	0549	T292B406J030(1)S
68.0	B	20	T192B686M030AS	1.0	13.0	2.54	1285	0110	0330	0550	T292B686M030(1)S
68.0	B	10	T192B686K030AS	1.0	13.0	2.54	1285	0111	0331	0551	T292B686K030(1)S
68.0	B	5	T192B686J030AS	1.0	13.0	2.54	1285	0112	0332	0552	T292B686J030(1)S
100.0	C	20	T192C107M030AS	2.0	17.0	2.26	1450	0113	0333	0553	T292C107M030(1)S
100.0	C	10	T192C107K030AS	2.0	17.0	2.26	1450	0114	0334	0554	T292C107K030(1)S
100.0	C	5	T192C107J030AS	2.0	17.0	2.26	1450	0115	0335	0555	T292C107J030(1)S
150.0	C	20	T192C157M030AS	2.0	23.0	2.03	1525	0116	0336	0556	T292C157M030(1)S
150.0	C	10	T192C157K030AS	2.0	23.0	2.03	1525	0117	0337	0557	T292C157K030(1)S
150.0	C	5	T192C157J030AS	2.0	23.0	2.03	1525	0118	0338	0558	T292C157J030(1)S
300.0	D	20	T192D307M030AS	8.0	31.0	1.37	1950	0119	0339	0559	T292D307M030(1)S
300.0	D	10	T192D307K030AS	8.0	31.0	1.37	1950	0120	0340	0560	T292D307K030(1)S

(1) To complete the KEMET part number, insert Failure Rate Level: M = (1.0); P = (0.1); and R = (.01)
(#) Dash number shall include letter "H" to indicate high vibration and shock requirements (i.e. 80g vibration and 500g shock)

T192/T292 (CLR79) Ratings & Part Number Reference

Cap µF	Case Size	Cap Tol.	KEMET Part Number	Max. D.C. Leakage µA +25°C	Max. D.F. @ 25°C 120 Hz	Max. ESR Ohms at +25°C 120 Hz	Max. Ripple Current mArms at 85°C 40 kHz	MIL-PRF-39006/22F (CLR79) Capacitors Dash Number Reference (#) Failure Rate (%/1000 Hrs) M(1.0)	P(0.1)	R(0.01)	KEMET Military Equivalent
35 Volt Rating at +85°C (22 Volt Rating at +125°C)											
7.0	A	10,20,5	T192A705(2)035AS	0.75	7.4	7.0	620	N/A	N/A	N/A	N/A
15.0	A	10,20,5	T192A156(2)035AS	0.75	14.0	6.2	660	N/A	N/A	N/A	N/A
35.0	B	10,20,5	T192B356(2)035AS	1.00	22.2	4.2	1000	N/A	N/A	N/A	N/A
68.0	B	10,20,5	T192B686(2)035AS	1.00	30.0	2.9	1195	N/A	N/A	N/A	N/A
82.0	C	10,20,5	T192C826(2)035AS	2.00	31.0	2.5	1400	N/A	N/A	N/A	N/A
120.0	C	10,20,5	T192C127(2)035AS	2.00	43.4	2.4	1490	N/A	N/A	N/A	N/A
270.0	D	10,20,5	T192D277(2)035AS	3.00	57.0	1.4	1950	N/A	N/A	N/A	N/A
50 Volt Rating at +85°C (30 Volt Rating at +125°C)											
5.0	A	20	T192A505M050AS	1.0	3.0	7.96	580	0121	0341	0561	T292A505M050(1)S
5.0	A	10	T192A505K050AS	1.0	3.0	7.96	580	0122	0342	0562	T292A505K050(1)S
5.0	A	5	T192A505J050AS	1.0	3.0	7.96	580	0123	0343	0563	T292A505J050(1)S
10.0	A	20	T192A106M050AS	1.0	4.0	5.31	715	0124	0344	0564	T292A106M050(1)S
10.0	A	10	T192A106K050AS	1.0	4.0	5.31	715	0125	0345	0565	T292A106K050(1)S
10.0	A	5	T192A106J050AS	1.0	4.0	5.31	715	0126	0346	0566	T292A106J050(1)S
25.0	B	20	T192B256M050AS	1.0	8.0	4.25	1005	0127	0347	0567	T292B256M050(1)S
25.0	B	10	T192B256K050AS	1.0	8.0	4.25	1005	0128	0348	0568	T292B256K050(1)S
25.0	B	5	T192B256J050AS	1.0	8.0	4.25	1005	0129	0349	0569	T292B256J050(1)S
47.0	B	20	T192B476M050AS	1.0	11.0	3.11	1155	0130	0350	0570	T292B476M050(1)S
47.0	B	10	T192B476K050AS	1.0	11.0	3.11	1155	0131	0351	0571	T292B476K050(1)S
47.0	B	5	T192B476J050AS	1.0	11.0	3.11	1155	0132	0352	0572	T292B476J050(1)S
60.0	C	20	T192C606M050AS	2.0	12.0	2.65	1335	0133	0353	0573	T292C606M050(1)S
60.0	C	10	T192C606K050AS	2.0	12.0	2.65	1335	0134	0354	0574	T292C606K050(1)S
60.0	C	5	T192C606J050AS	2.0	12.0	2.65	1335	0135	0355	0575	T292C606J050(1)S
82.0	C	20	T192C826M050AS	2.0	15.0	2.43	1400	0136	0356	0576	T292C826M050(1)S
82.0	C	10	T192C826K050AS	2.0	15.0	2.43	1400	0137	0357	0577	T292C826K050(1)S
82.0	C	5	T192C826J050AS	2.0	15.0	2.43	1400	0138	0358	0578	T292C826J050(1)S
160.0	D	20	T192D167M050AS	8.0	17.0	1.41	1900	0139	0359	0579	T292D167M050(1)S
160.0	D	10	T192D167K050AS	8.0	17.0	1.41	1900	0140	0360	0580	T292D167K050(1)S
60 Volt Rating at +85°C (40 Volt Rating at +125°C)											
4.0	A	20	T192A405M060AS	1.0	2.8	9.29	525	0141	0361	0581	T292A405M060(1)S
4.0	A	10	T192A405K060AS	1.0	2.8	9.29	525	0142	0362	0582	T292A405K060(1)S
4.0	A	5	T192A405J060AS	1.0	2.8	9.29	525	0143	0363	0583	T292A405J060(1)S
8.2	A	20	T192A825M060AS	1.0	4.0	6.47	625	0144	0364	0584	T292A825M060(1)S
8.2	A	10	T192A825K060AS	1.0	4.0	6.47	625	0145	0365	0585	T292A825K060(1)S
8.2	A	5	T192A825J060AS	1.0	4.0	6.47	625	0146	0366	0586	T292A825J060(1)S
20.0	B	20	T192B206M060AS	1.0	7.0	4.64	930	0147	0367	0587	T292B206M060(1)S
20.0	B	10	T192B206K060AS	1.0	7.0	4.64	930	0148	0368	0588	T292B206K060(1)S
20.0	B	5	T192B206J060AS	1.0	7.0	4.64	930	0149	0369	0589	T292B206J060(1)S
39.0	B	20	T192B396M060AS	1.0	10.0	3.40	1110	0150	0370	0590	T292B396M060(1)S
39.0	B	10	T192B396K060AS	1.0	10.0	3.40	1110	0151	0371	0591	T292B396K060(1)S
39.0	B	5	T192B396J060AS	1.0	10.0	3.40	1110	0152	0372	0592	T292B396J060(1)S
50.0	C	20	T192C506M060AS	2.0	10.0	2.65	1330	0153	0373	0593	T292C506M060(1)S
50.0	C	10	T192C506K060AS	2.0	10.0	2.65	1330	0154	0374	0594	T292C506K060(1)S
50.0	C	5	T192C506J060AS	2.0	10.0	2.65	1330	0155	0375	0595	T292C506J060(1)S
68.0	C	20	T192C686M060AS	2.0	13.0	2.54	1365	0156	0376	0596	T292C686M060(1)S
68.0	C	10	T192C686K060AS	2.0	13.0	2.54	1365	0157	0377	0597	T292C686K060(1)S
68.0	C	5	T192C686J060AS	2.0	13.0	2.54	1365	0158	0378	0598	T292C686J060(1)S
140.0	D	20	T192D147M060AS	8.0	16.0	1.52	1850	0159	0379	0599	T292D147M060(1)S
140.0	D	10	T192D147K060AS	8.0	16.0	1.52	1850	0160	0380	0600	T292D147K060(1)S
75 Volt Rating at +85°C (50 Volt Rating at +125°C)											
3.5	A	20	T192A355M075AS	1.0	2.5	9.48	525	0161	0381	0601	T292A355M075(1)S
3.5	A	10	T192A355K075AS	1.0	2.5	9.48	525	0162	0382	0602	T292A355K075(1)S
3.5	A	5	T192A355J075AS	1.0	2.5	9.48	525	0163	0383	0603	T292A355J075(1)S
6.8	A	20	T192A685M075AS	1.0	3.5	6.83	610	0164	0384	0604	T292A685M075(1)S
6.8	A	10	T192A685K075AS	1.0	3.5	6.83	610	0165	0385	0605	T292A685K075(1)S
6.8	A	5	T192A685J075AS	1.0	3.5	6.83	610	0166	0386	0606	T292A685J075(1)S
15.0	B	20	T192B156M075AS	1.0	6.0	5.31	890	0167	0387	0607	T292B156M075(1)S
15.0	B	10	T192B156K075AS	1.0	6.0	5.31	890	0168	0388	0608	T292B156K075(1)S
15.0	B	5	T192B156J075AS	1.0	6.0	5.31	890	0169	0389	0609	T292B156J075(1)S

(1) To complete the KEMET part number, insert Failure Rate Level: M = (1.0); P = (0.1); and R = (.01)
(#) Dash number shall include letter "H" to indicate high vibration and shock requirements (i.e. 80g vibration and 500g shock)

T192/T292 (CLR79) Ratings & Part Number Reference

Cap µF	Case Size	Cap Tol.	KEMET Part Number	Max. D.C. Leakage µA +25°C	Max. D.F. @ 25°C 120 Hz	Max. ESR Ohms at +25°C 120 Hz	Max. Ripple Current mArms at 85°C 40 kHz	MIL-PRF-39006/22F (CLR79) Capacitors Dash Number Reference (#) Failure Rate (%/1000 Hrs)			KEMET Military Equivalent
								M(1.0)	P(0.1)	R(0.01)	
75 Volt Rating at +85°C (50 Volt Rating at +125°C) Continued											
33.0	B	20	T192B336M075AS	1.0	10.0	4.02	1000	0170	0390	0610	T292B336M075(1)S
33.0	B	10	T192B336K075AS	1.0	10.0	4.02	1000	0171	0391	0611	T292B336K075(1)S
33.0	B	5	T192B336J075AS	1.0	10.0	4.02	1000	0172	0392	0612	T292B336J075(1)S
40.0	C	20	T192C406M075AS	2.0	9.0	2.99	1250	0173	0393	0613	T292C406M075(1)S
40.0	C	10	T192C406K075AS	2.0	9.0	2.99	1250	0174	0394	0614	T292C406K075(1)S
40.0	C	5	T192C406J075AS	2.0	9.0	2.99	1250	0175	0395	0615	T292C406J075(1)S
56.0	C	20	T192C566M075AS	2.0	11.0	2.61	1335	0176	0396	0616	T292C566M075(1)S
56.0	C	10	T192C566K075AS	2.0	11.0	2.61	1335	0177	0397	0617	T292C566K075(1)S
56.0	C	5	T192C566J075AS	2.0	11.0	2.61	1335	0178	0398	0618	T292C566J075(1)S
110.0	D	20	T192D117M075AS	9.0	12.0	1.45	1850	0179	0399	0619	T292D117M075(1)S
110.0	D	10	T192D117K075AS	9.0	12.0	1.45	1850	0180	0400	0620	T292D117K075(1)S
100 Volt Rating at +85°C (65 Volt Rating at +125°C)											
2.5	A	20	T192A255M100AS	1.0	2.0	10.62	505	0181	0401	0621	T292A255M100(1)S
2.5	A	10	T192A255K100AS	1.0	2.0	10.62	505	0182	0402	0622	T292A255K100(1)S
2.5	A	5	T192A255J100AS	1.0	2.0	10.62	505	0183	0403	0623	T292A255J100(1)S
4.7	A	20	T192A475M100AS	1.0	3.0	8.47	565	0184	0404	0624	T292A475M100(1)S
4.7	A	10	T192A475K100AS	1.0	3.0	8.47	565	0185	0405	0625	T292A475K100(1)S
4.7	A	5	T192A475J100AS	1.0	3.0	8.47	565	0186	0406	0626	T292A475J100(1)S
11.0	B	20	T192B116M100AS	1.0	5.0	6.03	835	0187	0407	0627	T292B116M100(1)S
11.0	B	10	T192B116K100AS	1.0	5.0	6.03	835	0188	0408	0628	T292B116K100(1)S
11.0	B	5	T192B116J100AS	1.0	5.0	6.03	835	0189	0409	0629	T292B116J100(1)S
22.0	B	20	T192B226M100AS	1.0	7.5	4.52	965	0190	0410	0630	T292B226M100(1)S
22.0	B	10	T192B226K100AS	1.0	7.5	4.52	965	0191	0411	0631	T292B226K100(1)S
22.0	B	5	T192B226J100AS	1.0	7.5	4.52	965	0192	0412	0632	T292B226J100(1)S
30.0	C	20	T192C306M100AS	2.0	7.0	3.10	1240	0193	0413	0633	T292C306M100(1)S
30.0	C	10	T192C306K100AS	2.0	7.0	3.10	1240	0194	0414	0634	T292C306K100(1)S
30.0	C	5	T192C306J100AS	2.0	7.0	3.10	1240	0195	0415	0635	T292C306J100(1)S
43.0	C	20	T192C436M100AS	2.0	8.5	2.62	1335	0196	0416	0636	T292C436M100(1)S
43.0	C	10	T192C436K100AS	2.0	8.5	2.62	1335	0197	0417	0637	T292C436K100(1)S
43.0	C	5	T192C436J100AS	2.0	8.5	2.62	1335	0198	0418	0638	T292C436J100(1)S
86.0	D	20	T192D866M100AS	9.0	10.0	1.54	1800	0199	0419	0639	T292D866M100(1)S
86.0	D	10	T192D866K100AS	9.0	10.0	1.54	1800	0200	0420	0640	T292D866K100(1)S
125 Volt Rating at +85°C (85 Volt Rating at +125°C)											
1.7	A	20	T192A175M125AS	1.0	2.0	15.61	415	0201	0421	0641	T292A175M125(1)S
1.7	A	10	T192A175K125AS	1.0	2.0	15.61	415	0202	0422	0642	T292A175K125(1)S
1.7	A	5	T192A175J125AS	1.0	2.0	15.61	415	0203	0423	0643	T292A175J125(1)S
3.6	A	20	T192A365M125AS	1.0	2.7	9.95	520	0204	0424	0644	T292A365M125(1)S
3.6	A	10	T192A365K125AS	1.0	2.7	9.95	520	0205	0425	0645	T292A365K125(1)S
3.6	A	5	T192A365J125AS	1.0	2.7	9.95	520	0206	0426	0646	T292A365J125(1)S
9.0	B	20	T192B905M125AS	1.0	5.0	7.37	755	0207	0427	0647	T292B905M125(1)S
9.0	B	10	T192B905K125AS	1.0	5.0	7.37	755	0208	0428	0648	T292B905K125(1)S
9.0	B	5	T192B905J125AS	1.0	5.0	7.37	755	0209	0429	0649	T292B905J125(1)S
14.0	B	20	T192B146M125AS	1.0	6.0	5.69	860	0210	0430	0650	T292B146M125(1)S
14.0	B	10	T192B146K125AS	1.0	6.0	5.69	860	0211	0431	0651	T292B146K125(1)S
14.0	B	5	T192B146J125AS	1.0	6.0	5.69	860	0212	0432	0652	T292B146J125(1)S
18.0	C	20	T192C186M125AS	2.0	5.0	3.69	1130	0213	0433	0653	T292C186M125(1)S
18.0	C	10	T192C186K125AS	2.0	5.0	3.69	1130	0214	0434	0654	T292C186K125(1)S
18.0	C	5	T192C186J125AS	2.0	5.0	3.69	1130	0215	0435	0655	T292C186J125(1)S
25.0	C	20	T192C256M125AS	2.0	6.0	3.18	1200	0216	0436	0656	T292C256M125(1)S
25.0	C	10	T192C256K125AS	2.0	6.0	3.18	1200	0217	0437	0657	T292C256K125(1)S
25.0	C	5	T192C256J125AS	2.0	6.0	3.18	1200	0218	0438	0658	T292C256J125(1)S
56.0	D	20	T192D566M125AS	10.0	6.5	1.54	1800	0219	0439	0659	T292D566M125(1)S
56.0	D	10	T192D566K125AS	10.0	6.5	1.54	1800	0220	0440	0660	T292D566K125(1)S

(1) To complete the KEMET part number, insert Failure Rate Level: M = (1.0); P = (0.1); and R = (.01)
(#) Dash number shall include letter "H" to indicate high vibration and shock requirements (i.e. 80g vibration and 500g shock)

T195/T295 (CLR81) Ratings & Part Number Reference

Cap µF	Case Size	Cap Tol.	KEMET Part Number	Max. D.C. Leakage µA +25°C	Max. D.F. @ 25°C 120 Hz	Max. ESR Ohms at +25°C 120 Hz	Max. Ripple Current mArms at 85°C 40 kHz	MIL-PRF-39006/25B (CLR81) Capacitors Dash Number Reference (#) Failure Rate (%/1000 Hrs)			KEMET Military Equivalent
								M(1.0)	P(0.1)	R(0.01)	
6 Volt Rating at +85°C (4 Volt Rating at +125°C)											
180.0	A	20,10,5	T195A187(2)006AS	6.0	37.0	2.70	1010	N/A	N/A	N/A	N/A
220.0	A	20	T195A227M006AS	2.0	50.0	3.02	1000	0001	0089	0177	T295A227M006(1)S
220.0	A	10	T195A227K006AS	2.0	50.0	3.02	1000	0002	0090	0178	T295A227K006(1)S
560.0	B	20,10,5	T195B567(2)006AS	3.0	76.0	1.80	1550	N/A	N/A	N/A	N/A
820.0	B	20	T195B827M006AS	3.0	155.0	2.51	1500	0003	0091	0179	T295B827M006(1)S
820.0	B	10	T195B827K006AS	3.0	155.0	2.51	1500	0004	0092	0180	T295B827K006(1)S
1200.0	C	20,10,5	T195C128(2)006AS	6.0	118.0	1.30	1930	N/A	N/A	N/A	N/A
1500.0	C	20	T195C158M006AS	5.0	172.0	1.52	1900	0005	0093	0181	T295C158M006(1)S
1500.0	C	10	T195C158K006AS	5.0	172.0	1.52	1900	0006	0094	0182	T295C158K006(1)S
2200.0	D	20	T195D228M006AS	6.0	170.0	1.03	2300	0007	0095	0183	T295D228M006(1)S
2200.0	D	10	T195D228K006AS	6.0	170.0	1.03	2300	0008	0096	0184	T295D228K006(1)S
8 Volt Rating at +85°C (5 Volt Rating at +125°C)											
150.0	A	20,10,5	T195A157(2)008AS	2.0	34.0	3.00	960	N/A	N/A	N/A	N/A
180.0	A	20	T195A187M008AS	2.0	41.0	3.02	1000	0009	0097	0185	T295A187M008(1)S
180.0	A	10	T195A187K008AS	2.0	41.0	3.02	1000	0010	0098	0186	T295A187K008(1)S
470.0	B	20,10,5	T195B477(2)008AS	3.0	67.0	1.90	1500	N/A	N/A	N/A	N/A
680.0	B	20	T195B687M008AS	3.0	130.0	2.54	1500	0011	0099	0187	T295B687M008(1)S
680.0	B	10	T195B687K008AS	3.0	130.0	2.54	1500	0012	0100	0188	T295B687K008(1)S
1000.0	C	20,10,5	T195C108(2)008AS	6.0	98.0	1.30	1930	N/A	N/A	N/A	N/A
1500.0	C	20	T195C158M008AS	5.0	170.0	1.50	1900	0013	0101	0189	T295C158M008(1)S
1500.0	C	10	T195C158K008AS	5.0	170.0	1.50	1900	0014	0102	0190	T295C158K008(1)S
1800.0	D	20	T195D188M008AS	7.0	138.0	1.02	2300	0015	0103	0191	T295D188M008(1)S
1800.0	D	10	T195D188K008AS	7.0	138.0	1.02	2300	0016	0104	0192	T295D188K008(1)S
10 Volt Rating at +85°C (7 Volt Rating at +125°C)											
120.0	A	20,10,5	T195A127(2)010AS	2.0	29.0	3.20	930	N/A	N/A	N/A	N/A
150.0	A	20	T195A157M010AS	2.0	34.0	3.01	900	0017	0105	0193	T295A157M010(1)S
150.0	A	10	T195A157K010AS	2.0	34.0	3.01	900	0018	0106	0194	T295A157K010(1)S
390.0	B	20,10,5	T195B397(2)010AS	3.0	59.0	2.00	1470	N/A	N/A	N/A	N/A
560.0	B	20	T195B567M010AS	3.0	106.0	2.51	1450	0019	0107	0195	T295B567M010(1)S
560.0	B	10	T195B567K010AS	3.0	106.0	2.51	1450	0020	0108	0196	T295B567K010(1)S
820.0	C	20,10,5	T195B827M010AS	6.0	80.0	1.30	1930	N/A	N/A	N/A	N/A
1200.0	C	20	T195C128M010AS	5.0	137.0	1.51	1850	0021	0109	0197	T295C128M010(1)S
1200.0	C	10	T195C128K010AS	5.0	137.0	1.51	1850	0022	0110	0198	T295C128K010(1)S
1500.0	D	20	T195D158M010AS	7.0	114.0	1.01	2300	0023	0111	0199	T295D158M010(1)S
1500.0	D	10	T195D158K010AS	7.0	114.0	1.01	2300	0024	0112	0200	T295D158K010(1)S
15 Volt Rating at +85°C (10 Volt Rating at +125°C)											
82.0	A	20,10,5	T195A826(2)015AS	2.0	20.0	3.30	915	N/A	N/A	N/A	N/A
100.0	A	20	T195A107M015AS	2.0	30.0	3.98	900	0025	0113	0201	T295A107M015(1)S
100.0	A	10	T195A107K015AS	2.0	30.0	3.98	900	0026	0114	0202	T295A107K015(1)S
270.0	B	20,10,5	T195B277(2)015AS	3.0	43.0	2.10	1430	N/A	N/A	N/A	N/A
390.0	B	20	T195B397M015AS	3.0	74.0	2.52	1450	0027	0115	0203	T295B397M015(1)S
390.0	B	10	T195B397K015AS	3.0	74.0	2.52	1450	0028	0116	0204	T295B397K015(1)S
680.0	C	20,10,5	T195C687(2)015AS	6.0	72.0	1.40	1860	N/A	N/A	N/A	N/A
820.0	C	20	T195C827M015AS	6.0	111.0	1.80	1800	0029	0117	0205	T295C827M015(1)S
820.0	C	10	T195C827K015AS	6.0	111.0	1.80	1800	0030	0118	0206	T295C827K015(1)S
1000.0	D	20	T195D108M015AS	8.0	92.0	1.22	2300	0031	0119	0207	T295D108M015(1)S
1000.0	D	10	T195D108K015AS	8.0	92.0	1.22	2300	0032	0120	0208	T295D108K015(1)S
25 Volt Rating at +85°C (15 Volt Rating at +125°C)											
56.0	A	20,10,5	T195A566(2)025AS	2.0	15.0	3.50	890	N/A	N/A	N/A	N/A
68.0	A	20	T195A686M025AS	2.0	22.0	4.29	850	0033	0121	0209	T295A686M025(1)S
68.0	A	10	T195A686K025AS	2.0	22.0	4.29	850	0034	0122	0210	T295A686K025(1)S
180.0	B	20,10,5	T195B187(2)025AS	3.0	30.0	2.2	1400	N/A	N/A	N/A	N/A
270.0	B	20	T195B277M025AS	3.0	55.0	2.70	1400	0035	0123	0211	T295B277M025(1)S
270.0	B	10	T195B277K025AS	3.0	55.0	2.70	1400	0036	0124	0212	T295B277K025(1)S
470.0	C	20,10,5	T195C477K025AS	6.0	53.0	1.50	1800	N/A	N/A	N/A	N/A
560.0	C	20	T195C567M025AS	7.0	76.0	1.80	1750	0037	0125	0213	T295C567M025(1)S
560.0	C	10	T195C567K025AS	7.0	76.0	1.80	1750	0038	0126	0214	T295C567K025(1)S
680.0	D	20	T195D687M025AS	8.0	63.0	1.23	2100	0039	0127	0215	T295D687M025(1)S
680.0	D	10	T195D687K025AS	8.0	63.0	1.23	2100	0040	0128	0216	T295D687K025(1)S

(1) To complete the KEMET part number, insert Failure Rate Level: M = (1.0); P = (0.1); and R = (.01)
(#) Dash number shall include letter "H" to indicate high vibration and shock requirements (i.e. 80g vibration and 500g shock)

T195/T295 (CLR81) Ratings & Part Number Reference

Cap µF	Case Size	Cap Tol.	KEMET Part Number	Max. D.C. Leakage µA +25°C	Max. D.F. @ 25°C 120 Hz	Max. ESR Ohms at +25°C 120 Hz	Max. Ripple Current mArms at 85°C 40 kHz	MIL-PRF-39006/25B (CLR81) Capacitors Dash Number Reference (#) Failure Rate (%/1000 Hrs)			KEMET Military Equivalent
								M(1.0)	P(0.1)	R(0.01)	
30 Volt Rating at +85°C (20 Volt Rating at +125°C)											
47.0	A	20,10,5	T195A476(2)030AS	2.0	14.0	4.00	830	N/A	N/A	N/A	N/A
56.0	A	20	T195A566M030AS	2.0	22.0	5.21	800	0041	0129	0217	T295A566M030(1)S
56.0	A	10	T195A566K030AS	2.0	22.0	5.21	800	0042	0130	0218	T295A566K030(1)S
150.0	B	20,10,5	T195B157(2)030AS	3.0	27.0	2.40	1340	N/A	N/A	N/A	N/A
220.0	B	20	T195B227M030AS	3.0	42.0	2.53	1200	0043	0131	0219	T295B227M030(1)S
220.0	B	10	T195B227K030AS	3.0	42.0	2.53	1200	0044	0132	0220	T295B227K030(1)S
390.0	C	20,10,5	T195C397(2)030AS	6.0	47.0	1.60	1740	N/A	N/A	N/A	N/A
470.0	C	20	T195C477M030AS	8.0	64.0	1.81	1500	0045	0133	0221	T295C477M030(1)S
470.0	C	10	T195C477K030AS	8.0	64.0	1.81	1500	0046	0134	0222	T295C477K030(1)S
560.0	D	20	T195D567M030AS	9.0	55.0	1.30	2000	0047	0135	0223	T295D567M030(1)S
560.0	D	10	T195D567K030AS	9.0	55.0	1.30	2000	0048	0136	0224	T295D567K030(1)S
35 Volt Rating at +85°C (22 Volt Rating at +125°C)											
39.0	A	20,10,5	T195A396(2)035AS	2.0	12.0	4.10	820	N/A	N/A	N/A	N/A
120.0	B	20,10,5	T195B127(2)035AS	3.0	22.6	2.50	1315	N/A	N/A	N/A	N/A
330.0	C	20,10,5	T195C337(2)035AS	6.0	45.0	1.80	1640	N/A	N/A	N/A	N/A
370.0	D	20,10,5	T195D377(2)035AS	9.0	36.3	1.30	2040	N/A	N/A	N/A	N/A
50 Volt Rating at +85°C (30 Volt Rating at +125°C)											
33.0	A	20	T195A336M050AS	2.0	12.3	4.95	700	0049	0137	0225	T295A336M050(1)S
33.0	A	10	T195A336K050AS	2.0	12.3	4.95	700	0050	0138	0226	T295A336K050(1)S
120.0	B	20	T195B127M050AS	4.0	22.5	2.49	1200	0051	0139	0227	T295B127M050(1)S
120.0	B	10	T195B127K050AS	4.0	22.5	2.49	1200	0052	0140	0228	T295B127K050(1)S
270.0	C	20	T195C277M050AS	8.0	37.0	1.82	1450	0053	0141	0229	T295C277M050(1)S
270.0	C	10	T195C277K050AS	8.0	37.0	1.82	1450	0054	0142	0230	T295C277K050(1)S
330.0	D	20	T195D337M050AS	9.0	38.0	1.53	1900	0055	0143	0231	T295D337M050(1)S
330.0	D	10	T195D337K050AS	9.0	38.0	1.53	1900	0056	0144	0232	T295D337K050(1)S
60 Volt Rating at +85°C (40 Volt Rating at +125°C)											
27.0	A	20	T195A276M060AS	3.0	10.2	5.01	700	0057	0145	0233	T295A276M060(1)S
27.0	A	10	T195A276K060AS	3.0	10.2	5.01	700	0058	0146	0234	T295A276K060(1)S
82.0	B	20,10,5	T195B826(2)060AS	4.0	18.0	2.90	1220	N/A	N/A	N/A	N/A
100.0	B	20	T195B107M060AS	4.0	19.0	2.52	1100	0059	0147	0235	T295B107M060(1)S
100.0	B	10	T195B107K060AS	4.0	19.0	2.52	1100	0060	0148	0236	T295B107K060(1)S
220.0	C	20	T195C227M060AS	8.0	30.0	1.81	1400	0061	0149	0237	T295C227M060(1)S
220.0	C	10	T195C227K060AS	8.0	30.0	1.81	1400	0062	0150	0238	T295C227K060(1)S
270.0	D	20	T195D277M060AS	9.0	27.0	1.33	1850	0063	0151	0239	T295D277M060(1)S
270.0	D	10	T195D277K060AS	9.0	27.0	1.33	1850	0064	0152	0240	T295D277K060(1)S
75 Volt Rating at +85°C (50 Volt Rating at +125°C)											
22.0	A	20	T195A226M075AS	3.0	8.5	5.13	600	0065	0153	0241	T295A226M075(1)S
22.0	A	10	T195A226K075AS	3.0	8.5	5.13	600	0066	0154	0242	T295A226K075(1)S
68.0	B	20,10,5	T195B686(2)075AS	4.0	15.4	3.00	1200	N/A	N/A	N/A	N/A
82.0	B	20	T195B826M075AS	4.0	15.2	2.46	1000	0067	0155	0243	T295B826M075(1)S
82.0	B	10	T195B826K075AS	4.0	15.2	2.46	1000	0068	0156	0244	T295B826K075(1)S
180.0	C	20	T195C187M075AS	9.0	37.0	2.23	1300	0069	0157	0245	T295C187M075(1)S
180.0	C	10	T195C187K075AS	9.0	37.0	2.23	1300	0070	0158	0246	T295C187K075(1)S
220.0	D	20	T195D227M075AS	10.0	24.4	1.80	1800	0071	0159	0247	T295D227M075(1)S
220.0	D	10	T195D227K075AS	10.0	24.4	1.80	1800	0072	0160	0248	T295D227K075(1)S
100 Volt Rating at +85°C (65 Volt Rating at +125°C)											
10.0	A	M	T195A106M100AS	3.0	4.5	5.97	800	0073	0161	0249	T295A106M100(1)S
10.0	A	K	T195A106K100AS	3.0	4.5	5.97	800	0074	0162	0250	T295A106K100(1)S
39.0	B	M	T195B396M100AS	5.0	10.4	3.54	1300	0075	0163	0251	T295B396M100(1)S
39.0	B	K	T195B396K100AS	5.0	10.4	3.54	1300	0076	0164	0252	T295B396K100(1)S
68.0	C	M	T195C686M100AS	10.0	11.3	2.21	1600	0077	0165	0253	T295C686M100(1)S
68.0	C	K	T195C686K100AS	10.0	11.3	2.21	1600	0078	0166	0254	T295C686K100(1)S
120.0	D	M	T195D127M100AS	12.0	25.0	2.76	2000	0079	0167	0255	T295D127M100(1)S
120.0	D	K	T195D127K100AS	12.0	25.0	2.76	2000	0080	0168	0256	T295D127K100(1)S
125 Volt Rating at +85°C (85 Volt Rating at +125°C)											
6.8	A	M	T195A685M125AS	3.0	6.0	11.71	700	0081	0169	0257	T295A685M125(1)S
6.8	A	K	T195A685K125AS	3.0	6.0	11.71	700	0082	0170	0258	T295A685K125(1)S
27.0	B	M	T195B276M125AS	5.0	7.2	3.54	1200	0083	0171	0259	T295B276M125(1)S
27.0	B	K	T195B276K125AS	5.0	7.2	3.54	1200	0084	0172	0260	T295B276K125(1)S
47.0	C	M	T195C476M125AS	10.0	7.9	2.23	1500	0085	0173	0261	T295C476M125(1)S
47.0	C	K	T195C476K125AS	10.0	7.9	2.23	1500	0086	0174	0262	T295C476K125(1)S
82.0	D	M	T195D826M125AS	12.0	17.4	2.82	1900	0087	0175	0263	T295D826M125(1)S
82.0	D	K	T195D826K125AS	12.0	17.4	2.82	1900	0088	0176	0264	T295D826K125(1)S

(1) To complete the KEMET part number, insert Failure Rate Level: M = (1.0); P = (0.1); and R = (.01)
(#) Dash number shall include letter "H" to indicate high vibration and shock requirements (i.e. 80g vibration and 500g shock)

T197 High Temperature Ratings & Part Number Reference

Cap µF	Case Size	Cap Tolerance	KEMET Part Number	Max. D.C. Leakage µA + 25°C	Max. D.F. % @ 25°C 120 Hz	Max. ESR Ohms at +25°C 120 Hz	Max. Ripple Current mArms at 85°C 40 kHz
6 Volt Rating at +85°C (3 Volt Rating at +200°C)							
30.0	A	20, 10, 5	T197A306(1)006AS	1.0	9.0	3.98	820
68.0	A	20, 10, 5	T197A686(1)006AS	1.0	15.0	2.93	960
140.0	B	20, 10, 5	T197B147(1)006AS	1.0	21.0	1.99	1200
270.0	B	20, 10, 5	T197B277(1)006AS	1.0	45.0	2.21	1375
330.0	C	20, 10, 5	T197C337(1)006AS	2.0	36.0	1.45	1800
560.0	C	20, 10, 5	T197C567(1)006AS	2.0	55.0	1.30	1900
1000.0	D	20, 10, 5	T197D108(1)006AS	3.0	72.0	0.95	2390
1200.0	D	20, 10	T197D128(1)006AS	3.0	90.0	1.00	2265
8 Volt Rating at +85°C (4 Volt Rating at +200°C)							
25.0	A	20, 10, 5	T197A256(1)008AS	1.0	7.5	3.98	820
56.0	A	20, 10, 5	T197A566(1)008AS	1.0	14.0	3.32	900
120.0	B	20, 10, 5	T197B127(1)008AS	1.0	20.0	2.21	1230
220.0	B	20, 10, 5	T197B227(1)008AS	1.0	40.0	2.41	1370
290.0	C	20, 10, 5	T197C297(1)008AS	2.0	34.0	1.56	1770
430.0	C	20, 10, 5	T197C437(1)008AS	2.0	46.0	1.42	1825
850.0	D	20, 10	T197D857(1)008AS	4.0	60.0	0.94	2330
10 Volt Rating at +85°C (5 Volt Rating at +200°C)							
20.0	A	20, 10, 5	T197A206(1)010AS	1.0	6.0	3.98	820
47.0	A	20, 10, 5	T197A476(1)010AS	1.0	13.0	3.67	855
100.0	B	20, 10, 5	T197B107(1)010AS	1.0	15.0	1.99	1200
150.0	B	20, 10, 5	T197B157(1)010AS	1.0	30.0	2.65	1270
180.0	B	20, 10, 5	T197B187(1)010AS	1.0	30.0	2.21	1365
250.0	C	20, 10, 5	T197C257(1)010AS	2.0	30.0	1.59	1720
390.0	C	20, 10, 5	T197C397(1)010AS	2.0	44.0	1.50	1800
470.0	C	20, 10, 5	T197C477(1)010AS	2.0	44.0	1.24	1800
680.0	D	20, 10, 5	T197D687(1)010AS	4.0	46.0	0.90	2490
750.0	D	20, 10	T197D757(1)010AS	4.0	50.0	0.88	2360
820.0	D	20, 10	T197D827(1)010AS	4.0	57.0	0.92	2360
15 Volt Rating at +85°C (7.5 Volt Rating at +200°C)							
15.0	A	20, 10, 5	T197A156(1)015AS	1.0	5.0	4.42	780
33.0	A	20, 10, 5	T197A336(1)015AS	1.0	10.0	4.02	820
70.0	B	20, 10, 5	T197B706(1)015AS	1.0	13.0	2.46	1150
120.0	B	20, 10, 5	T197B127(1)015AS	1.0	25.0	2.76	1450
170.0	C	20, 10, 5	T197C177(1)015AS	2.0	25.0	1.95	1480
270.0	C	20, 10, 5	T197C277(1)015AS	2.0	43.0	2.11	1740
470.0	D	20, 10, 5	T197D477(1)015AS	6.0	37.0	1.04	2100
540.0	D	20, 10	T197D547(1)015AS	6.0	40.0	0.98	2330
560.0	D	20, 10	T197D567(1)015AS	6.0	40.0	0.98	2330
25 Volt Rating at +85°C (12.5 Volt Rating at +200°C)							
10.0	A	20, 10, 5	T197A106(1)025AS	1.0	4.0	5.31	715
22.0	A	20, 10, 5	T197A226(1)025AS	1.0	7.0	4.22	800
27.0	A	20, 10, 5	T197A276(1)025AS	1.5	11.0	5.40	715
50.0	B	20, 10, 5	T197B506(1)025AS	1.0	11.0	2.92	1130
100.0	B	20, 10, 5	T197B107(1)025AS	1.0	21.0	2.78	1435
120.0	B	20, 10, 5	T197B127(1)025AS	2.0	25.0	2.76	1450
180.0	C	20, 10, 5	T197C187(1)025AS	2.0	28.0	2.06	1525
220.0	C	20, 10, 5	T197C227(1)025AS	2.0	35.0	2.11	1615
330.0	D	20, 10, 5	T197D337(1)025AS	7.0	30.0	1.21	1860
350.0	D	20, 10	T197D357(1)025AS	7.0	35.0	1.33	1970
390.0	D	20, 10	T197D397(1)025AS	7.0	35.0	1.19	2025
30 Volt Rating at +85°C (15 Volt Rating at +200°C)							
8.0	A	20, 10, 5	T197A805(1)030AS	1.0	4.0	6.64	640
15.0	A	20, 10, 5	T197A156(1)030AS	1.0	5.0	4.42	780
40.0	B	20, 10, 5	T197B406(1)030AS	1.0	10.0	3.32	1120
68.0	B	20, 10, 5	T197B686(1)030AS	1.0	13.0	2.54	1285
100.0	C	20, 10, 5	T197C107(1)030AS	2.0	17.0	2.26	1450
150.0	C	20, 10, 5	T197C157(1)030AS	2.0	23.0	2.03	1525
300.0	D	20, 10	T197D307(1)030AS	8.0	31.0	1.37	1950

(1) To complete KEMET part number, insert capacitance tolerance: K = ±10%, M = ±20% and J = ±5%.

T197 High Temperature Ratings & Part Number Reference

Cap µF	Case Size	Cap Tolerance	KEMET Part Number	Max. D.C. Leakage µA + 25°C	Max. D.F. % @ 25°C 120 Hz	Max. ESR Ohms at +25°C 120 Hz	Max. Ripple Current mArms at 85°C 40 kHz
35 Volt Rating at +85°C (17.5 Volt Rating at +200°C)							
15.0	A	20, 10	T197A156(1)035AS	1.0	7.0	6.19	660
68.0	B	20, 10	T197B686(1)035AS	1.0	15.0	2.93	1285
150.0	C	20, 10	T197C157(1)035AS	2.0	23.0	2.03	1525
220.0	D	20, 10	T197D227(1)035AS	3.0	23.0	1.39	1900
390.0	D	20, 10	T197D397(1)035AS	8.0	43.0	1.46	1900
50 Volt Rating at +85°C (25 Volt Rating at +200°C)							
5.0	A	20, 10, 5	T197A505(1)050AS	1.0	3.0	7.96	580
10.0	A	20, 10, 5	T197A106(1)050AS	1.0	4.0	5.31	715
25.0	B	20, 10, 5	T197B256(1)050AS	1.0	8.0	4.25	1005
47.0	B	20, 10, 5	T197B476(1)050AS	1.0	13.0	3.67	1155
60.0	C	20, 10, 5	T197C606(1)050AS	2.0	12.0	2.65	1335
82.0	C	20, 10, 5	T197C826(1)050AS	2.0	15.0	2.43	1400
160.0	D	20, 10	T197D167(1)050AS	8.0	17.0	1.41	1900
60 Volt Rating at +85°C (30 Volt Rating at +200°C)							
4.0	A	20, 10, 5	T197A405(1)060AS	1.0	2.8	9.29	525
8.2	A	20, 10, 5	T197A825(1)060AS	1.0	4.0	6.47	625
10.0	A	20, 10, 5	T197A106(1)060AS	1.0	4.0	5.30	570
20.0	B	20, 10, 5	T197B206(1)060AS	1.0	7.0	4.64	930
39.0	B	20, 10, 5	T197B396(1)060AS	1.0	12.0	4.08	1110
50.0	C	20, 10, 5	T197C506(1)060AS	2.0	10.0	2.65	1330
68.0	C	20, 10, 5	T197C686(1)060AS	2.0	13.0	2.54	1365
100.0	C	20, 10, 5	T197C107(1)060AS	2.0	18.0	2.39	1420
140.0	D	20, 10	T197D147(1)060AS	8.0	16.0	1.52	1850
150.0	D	20, 10	T197D157(1)060AS	6.0	17.0	1.50	1865
75 Volt Rating at +85°C (37.5 Volt Rating at +200°C)							
3.5	A	20, 10, 5	T197A355(1)075AS	1.0	2.5	9.48	525
6.8	A	20, 10, 5	T197A685(1)075AS	1.0	3.5	6.83	610
15.0	B	20, 10, 5	T197B156(1)075AS	1.0	6.0	5.31	890
33.0	B	20, 10, 5	T197B336(1)075AS	1.0	10.0	4.02	1000
40.0	C	20, 10, 5	T197C406(1)075AS	2.0	9.0	2.99	1250
56.0	C	20, 10, 5	T197C566(1)075AS	2.0	11.0	2.61	1335
68.0	C	20, 10, 5	T197C686(1)075AS	2.0	13.0	2.54	1520
110.0	D	20, 10	T197D117(1)075AS	9.0	12.0	1.45	1850
120.0	D	20, 10	T197D127(1)075AS	9.0	12.0	1.33	1915
100 Volt Rating at +85°C (50 Volt Rating at +200°C)							
2.5	A	20, 10, 5	T197A255(1)100AS	1.0	2.0	10.62	505
4.7	A	20, 10, 5	T197A475(1)100AS	1.0	3.0	8.47	565
11.0	B	20, 10, 5	T197B116(1)100AS	1.0	5.0	6.03	835
22.0	B	20, 10, 5	T197B226(1)100AS	1.0	8.0	4.82	965
30.0	C	20, 10, 5	T197C306(1)100AS	2.0	7.0	3.10	1240
43.0	C	20, 10, 5	T197C436(1)100AS	2.0	8.5	2.62	1335
86.0	D	20, 10	T197D866(1)100AS	9.0	10.0	1.54	1800
125 Volt Rating at +85°C (62.5 Volt Rating at +200°C)							
1.7	A	20, 10, 5	T197A175(1)125AS	1.0	2.0	15.61	415
2.7	A	20, 10, 5	T197A275(1)125AS	1.0	3.0	14.73	450
3.6	A	20, 10, 5	T197A365(1)125AS	1.0	3.0	11.05	520
9.0	B	20, 10, 5	T197B905(1)125AS	1.0	5.0	7.37	755
14.0	B	20, 10, 5	T197B146(1)125AS	1.0	6.0	5.69	860
18.0	C	20, 10, 5	T197C186(1)125AS	2.0	5.0	3.69	1130
25.0	C	20, 10, 5	T197C256(1)125AS	2.0	6.0	3.18	1200
56.0	D	20, 10	T197D566(1)125AS	10.0	6.5	1.54	1800

(1) To complete KEMET part number, insert capacitance tolerance: K = ±10%, M = ±20% and J = ±5%.

T198 High Temperature Ratings & Part Number Reference

Cap µF	Case Size	Cap Tol.	KEMET Part Number	Max. D.C Leakage µA +25°C	Max. D.F. @ 25°C 120 Hz	Max. ESR Ohms at +25°C 120 Hz	Max. Ripple Current mArms at 85°C 40 kHz
6 Volt Rating at +85°C (3 Volt Rating at +200°C)							
220.0	A	20, 10	T198A227(1)006AS	2.0	50.0	3.02	1000
470.0	B	20, 10	T198B477(1)006AS	2.0	90.0	2.54	1280
820.0	B	20, 10	T198B827(1)006AS	3.0	155.0	2.51	1500
1500.0	C	20, 10	T198C158(1)006AS	5.0	172.0	1.52	1900
2200.0	D	20, 10	T198D228(1)006AS	6.0	170.0	1.03	2300
8 Volt Rating at +85°C (4 Volt Rating at +200C)							
180.0	A	20, 10	T198A187(1)008AS	2.0	41.0	3.02	1000
680.0	B	20, 10	T198B687(1)008AS	3.0	130.0	2.54	1500
1500.0	C	20, 10	T198C158(1)008AS	5.0	170.0	1.50	1900
1800.0	D	20, 10	T198D188(1)008AS	7.0	138.0	1.02	2300
10 Volt Rating at +85°C (5 Volt Rating at +200°C)							
120.0	A	20, 10	T198A127(1)010AS	2.0	29.0	3.2	900
150.0	A	20, 10	T198A157(1)010AS	2.0	34.0	3.01	900
560.0	B	20, 10	T198B567(1)010AS	3.0	106.0	2.51	1450
1000.0	C	20, 10	T198C108(1)010AS	4.0	92.0	1.22	1720
1200.0	C	20, 10	T198C128(1)010AS	5.0	137.0	1.51	1850
1500.0	D	20, 10	T198D158(1)010AS	7.0	114.0	1.01	2300
15 Volt Rating at +85°C (7.5 Volt Rating at +200°C)							
100.0	A	20, 10	T198A107(1)015AS	2.0	30.0	3.98	900
390.0	B	20, 10	T198B397(1)015AS	3.0	74.0	2.52	1450
820.0	C	20, 10	T198C827(1)015AS	6.0	111.0	1.80	1800
1000.0	D	20, 10	T198D108(1)015AS	8.0	92.0	1.22	2300
25 Volt Rating at +85°C (12.5 Volt Rating at +200°C)							
68.0	A	20, 10	T198A686(1)025AS	2.0	22.0	4.29	850
180.0	B	20, 10	T198B187(1)025AS	3.0	35.0	2.58	1130
270.0	B	20, 10	T198B277(1)025AS	3.0	55.0	2.70	1400
390.0	C	20,10	T198C397(1)025AS	7.0	48.0	1.63	1400
470.0	C	20, 10	T198C477(1)025AS	7.0	48.0	1.35	1400
560.0	C	20, 10	T198C567(1)025AS	7.0	76.0	1.80	1750
680.0	D	20, 10	T198D687(1)025AS	8.0	63.0	1.23	2100
30 Volt Rating at +85°C (15 Volt Rating at +200°C)							
56.0	A	20, 10	T198A566(1)030AS	2.0	22.0	5.21	800
220.0	B	20, 10	T198B227(1)030AS	3.0	42.0	2.53	1200
470.0	C	20, 10	T198C477(1)030AS	8.0	64.0	1.81	1500
560.0	D	20, 10	T198D567(1)030AS	9.0	55.0	1.30	2000
35 Volt Rating at +85°C (17.5 Volt Rating at 200°C)							
39.0	A	20, 10	T198A396(1)035AS	2.0	12.0	4.10	820
270.0	C	20, 10	T198A277(1)035AS	7.0	37.0	1.82	1373
50 Volt Rating at +85°C (25 Volt Rating at +200°C)							
33.0	A	20, 10	T198A336(1)050AS	2.0	12.3	4.95	700
120.0	B	20, 10	T198B127(1)050AS	4.0	22.5	2.49	1200
270.0	C	20, 10	T198C277(1)050AS	8.0	37.0	1.82	1450
330.0	D	20, 10	T198D337(1)050AS	9.0	38.0	1.53	1900

(1) To complete KEMET part number, insert capacitance tolerance: K = ±10%, M = ±20% and J = ±5%.

T198 High Temperature Ratings & Part Number Reference

Cap µF	Case Size	Cap Tol.	KEMET Part Number	Max. D.C Leakage µA +25°C	Max. D.F. @ 25°C 120 Hz	Max. ESR Ohms at +25°C 120 Hz	Max. Ripple Current mArms at 85°C 40 kHz
60 Volt Rating at +85°C (30 Volt Rating at +200°C)							
12.0	A	20, 10	T198A126(1)060AS	3.0	7.0	7.74	700
15.0	A	20, 10	T198A156(1)060AS	3.0	8.0	7.10	700
27.0	A	20, 10	T198A276(1)060AS	3.0	10.2	5.00	700
47.0	B	20, 10	T198B476(1)060AS	4.0	13.0	3.67	1150
56.0	B	20, 10	T198B566(1)060AS	4.0	18.0	4.26	1150
82.0	B	20, 10	T198B826(1)060AS	4.0	22.0	3.56	1150
100.0	B	20, 10	T198B107(1)060AS	4.0	19.0	2.52	1100
120.0	C	20, 10	T198C127(1)060AS	8.0	20.0	2.21	1420
220.0	C	20, 10	T198C227(1)060AS	8.0	37.0	2.23	1400
270.0	D	20, 10	T198D277(1)060AS	9.0	27.0	1.33	1850
330.0	D	20, 10	T198D337(1)060AS	10.0	32.0	1.29	1850
75 Volt Rating at +85°C (37.5 Volt Rating at +200°C)							
8.2	A	20, 10	T198A825(1)075AS	3.0	6.0	9.70	610
22.0	A	20, 10	T198A226(1)075AS	3.0	8.5	5.13	600
47.0	B	20, 10	T198B476(1)075AS	4.0	15.0	4.23	1050
68.0	B	20, 10	T198B686(1)075AS	4.0	21.0	4.10	1050
82.0	B	20, 10	T198B826(1)075AS	4.0	15.2	2.46	1000
100.0	C	20, 10	T198C107(1)075AS	8.0	19.0	2.52	1335
110.0	B	20, 10	T198B117(1)075AS	2.0	11.0	1.33	1650
150.0	C	20, 10	T198C157(1)075AS	9.0	25.0	2.21	1335
180.0	C	20, 10	T198C187(1)075AS	9.0	28.0	2.06	1300
220.0	D	20, 10	T198D227(1)075AS	10.0	37.0	2.23	1800
100 Volt Rating at +85°C (50 Volt Rating at +200°C)							
5.6	A	20, 10	T198A565(1)100AS	2.0	6.0	14.21	530
10.0	A	20, 10	T198A106(1)100AS	3.0	4.5	5.97	800
33.0	B	20, 10	T198B336(1)100AS	3.0	14.0	5.63	1065
39.0	B	20, 10	T198B396(1)100AS	5.0	10.4	3.54	1300
47.0	C	20, 10	T198C476(1)100AS	4.0	9.0	2.54	1335
56.0	C	20, 10	T198C566(1)100AS	8.0	11.0	2.21	1600
68.0	C	20, 10	T198C686(1)100AS	10.0	15.0	2.93	1600
120.0	D	20, 10	T198D127(1)100AS	12.0	25.0	2.76	2000
220.0	D	20, 10	T198D227(1)100AS	12.0	30.0	1.81	2000
125 Volt Rating at +85°C (62.5 Volt Rating at 200°C)							
5.6	A	20, 10	T198A565(1)125AS	3.0	6.0	14.21	530
6.8	A	20, 10	T198A685(1)125AS	3.0	6.0	11.71	700
18.0	B	20, 10	T198B186(1)125AS	3.0	8.0	5.89	1065
27.0	B	20, 10	T198B276(1)125AS	5.0	7.2	3.54	1200
39.0	C	20, 10	T198C396(1)125AS	8.0	8.0	2.72	1280
47.0	C	20, 10	T198C476(1)125AS	10.0	9.0	2.54	1500
68.0	D	20, 10	T198D686(1)125AS	12.0	8.0	1.56	1860
82.0	D	20, 10	T198D826(1)125AS	12.0	17.4	2.82	1900

(1) To complete KEMET part number, insert capacitance tolerance: K = ±10%, M = ±20% and J = ±5%.

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